STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

'ENNIFER M. GRANHOLM
GOVERNOR

DEQ

STEVEN E. CHESTER
DIRECTOR

May 3, 2007

Ms. Melinda Keillor
Regulatory Specialist
The Environmental Quality Company
Michigan Disposal Waste Treatment Plant
49350 North I-94 Service Drive
Belleville, Michigan 48111

Dear Ms. Keillor:

SUBJECT: Draft Hazardous Waste Management Facility Operating License (License); Michigan Disposal Waste Treatment Plant (MDWTP), Belleville, Michigan; MID 000 724 831

The Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division (WHMD), has reviewed the License renewal application from MDWTP for their hazardous waste storage and treatment facility located at 49350 North I-94 Service Drive in Belleville, Michigan.

Based on our review, the WHMD has prepared a draft License for public review pursuant to Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The U.S. Environmental Protection Agency, Region 5 (U.S. EPA), has also prepared a draft Resource Conservation and Recovery Act (RCRA) permit covering the portions of the RCRA Program for which Michigan does not have authorization. The RCRA permit will be provided by the U.S. EPA under separate cover.

Enclosed please find copies of the draft operating license, the public notice announcing the public comment period, and the Fact Sheet describing the facility and the licensing process. The public notice is scheduled to appear in the Belleville View on May 3, 2007. Any comments regarding the draft License or RCRA permit must be submitted to the WHMD or the U.S. EPA, Region 5, by June 22, 2007.

Should you have any questions or comments regarding the draft License, please contact me. Should you have any questions or comments regarding the draft RCRA permit, please contact Mr. Jae Lee, Program Management Branch (DU-7J), U.S. EPA, Region 5, 77 West Jackson Boulevard, Chicago, Illinois 60604, or by telephone at 1-800-621-8431, Extension 63781.

Sincerely,

Kimberly M. Tyson

Kimberly M. Tyson, P.E.
Senior Environmental Engineer
Hazardous Waste Section
Waste and Hazardous Materials Division
517-373-2487

Enclosures

cc: Mr. Scott Maris, The Environmental Quality Company
Mr. Jae Lee, U.S. EPA, Region 5
Ms. De Montgomery, MDEQ
Mr. Steve Buda, MDEQ
Mr. Larry AuBuchon/Mr. Michael Busse, MDEQ
Mr. Joseph Rogers, MDEQ
Mr. Leo Parks, MDEQ
Operating License File

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

ENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

May 3, 2007

Mr. Jose Cisneros
Waste Management Branch (DW-8J)
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Dear Mr. Cisneros:

SUBJECT: Draft Hazardous Waste Management Facility Operating License (License); Michigan Disposal Waste Treatment Plant (MDWTP), Belleville, Michigan; MID 000 724 831

The Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division (WHMD), has reviewed the License renewal application from MDWTP for their hazardous waste storage and facility located at 49350 North I-94 Service Drive in Belleville, Michigan.

Based on our review, the WHMD has prepared a draft License for public review pursuant to Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The U.S. Environmental Protection Agency, Region 5 (U.S. EPA), has also prepared a draft Resource Conservation and Recovery Act (RCRA) permit covering the portions of the RCRA Program for which Michigan does not have authorization. The MDEQ understands that the RCRA permit has been provided to the public repositories by U.S. EPA staff.

Enclosed please find copies of the draft operating license, the public notice announcing the public comment period, and the Fact Sheet describing the facility and the licensing process. The public notice is scheduled to appear in the Belleville View on May 3, 2007. Any comments regarding the draft License or RCRA permit must be submitted to the WHMD or the U.S. EPA, Region 5, by June 22, 2007.

Should you have any questions or comments regarding the draft License, please contact me.

Sincerely,

Kimberly M. Tyson

Kimberly M. Tyson, P.E.
Senior Environmental Engineer
Hazardous Waste Section
Waste and Hazardous Materials Division
517-373-2487

Enclosures
cc: Mr. Jae Lee, U.S. EPA, Region 5
Operating License File

PUBLIC NOTICE

INTENT TO ISSUE AN OPERATING LICENSE AND FEDERAL PERMIT
TO MICHIGAN DISPOSAL WASTE TREATMENT PLANT
BELLEVILLE, MICHIGAN

May 3, 2007

The Michigan Department of Environmental Quality (MDEQ) and U.S. Environmental Protection Agency (U.S. EPA), Region 5, hereby give notice of their intent to issue a joint operating license, pursuant to Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, and federal Resource Conservation and Recovery Act (RCRA) permit to Michigan Disposal Waste Treatment Plant (MDWTP). The operating license and RCRA permit will allow MDWTP to continue to operate their hazardous waste storage and treatment facility located at 49350 North I-94 Service Drive in Belleville, Michigan.

The MDEQ and U.S. EPA invite public comment on the draft operating license and RCRA permit. A 7 p.m. public hearing is scheduled on Wednesday, June 6, 2007, at the Belleville High School Mini Auditorium, 501 W Columbia Avenue, Belleville, Michigan. The purpose of the hearing is to allow interested persons to submit oral or written comments regarding the draft operating license and RCRA permit. All persons attending the public hearing that intend to speak are requested to register by 7:30 p.m. The public comment period begins May 3, 2007, and ends June 22, 2007.

The draft operating license, RCRA permit, fact sheet, and application are available for inspection at the Fred C. Fischer Library, 167 Fourth Street, Belleville, Michigan; the Van Buren Township Hall, 46425 Tyler Road, Belleville, Michigan; and at the MDEQ, Southeast Michigan District Office, 27700 Donald Court, Warren, Michigan 48092 (contact Mr. Michael Busse at 586-753-3839). These materials and other supporting documents, including all information submitted by the applicant, are also available at the MDEQ, Waste and Hazardous Materials Division, Constitution Hall, Atrium North, 525 W Allegan Street, Lansing, Michigan (contact Ms. Kimberly M. Tyson at 517-373-2487); and at the U.S. EPA, Region 5, Program Management Branch (DU-7J), 77 W Jackson Boulevard, Chicago, Illinois 60604 (contact Mr. Jae Lee at 1-800-621-8431 ext. 63781). Copies of the documents may be obtained for cost of reproduction by sending your request to Ms. Tyson.

Written comments on the draft operating license and RCRA permit will be accepted during the public comment period. All comments submitted for consideration must be postmarked by June 22, 2007. Comments regarding the operating license and requests to be placed on the facility mailing list should be addressed to Ms. Tyson. Comments regarding the RCRA permit should be addressed to Mr. Lee.

Before issuing a final decision on the operating license and RCRA permit, the MDEQ and U.S. EPA will evaluate all comments received. Information regarding the final decision will be communicated to all persons who submit comments or are on the facility mailing list. The MDEQ and U.S. EPA will respond to all significant comments on the draft operating license or RCRA permit and explain any changes made to those documents.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

April 27, 2007

VIA TELEFAX

Ms. Darlene Hawver
Heritage Newspapers
One Heritage Drive, Suite 100
Southgate, Michigan 48195

Dear Ms. Hawver:

SUBJECT: Public Notice for Operating License Renewal; Michigan Disposal Waste Treatment Plant, Belleville, Michigan; MID 000 724 831

Enclosed is a copy of a public notice to be published for one day in the Belleville View as a display ad on Thursday, May 3, 2007. Publishing the notice on the date specified is essential. Please notify me immediately if it cannot be published as requested. The ad size should be as close as possible to two columns wide by eight inches tall. On April 16, 2007, the Michigan Department of Environmental Quality (MDEQ), Waste and Hazardous Materials Division, was given an estimate of $103.35 to have the notice published. If the actual cost to publish the notice is more than the estimate, please notify me prior to publishing it. Please send an invoice and a tear sheet, as proof of publication, to:

Ms. Brenda Phreed
Waste and Hazardous Materials Division
Department of Environmental Quality
P.O. Box 30241
Lansing, Michigan 48909

If you have any questions, please contact me at tysonkm@michigan.gov or by telephone.

Sincerely,

Kimberly M. Tyson

Kimberly M. Tyson, P.E.
Senior Environmental Engineer
Hazardous Waste Management Unit
Hazardous Waste Section
Waste and Hazardous Materials Division
517-373-2487

Enclosure
cc/enc: Mr. Jae Lee, U.S. Environmental Protection Agency, Region 5
Mr. George W. Bruchmann, MDEQ
Mr. Steve Buda, MDEQ
Mr. Larry AuBuchon/Mr. Mike Busse, MDEQ
Ms. Brenda Phreed, MDEQ
Operating License File

PUBLIC SERVICE ANNOUNCEMENT

Draft Hazardous Waste Management Facility Operating License Renewal For Michigan Disposal Waste Treatment Plant

The Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency will hold a public hearing on Wednesday, June 6, 2007 at 7:00 pm in the Belleville High School Mini Auditorium located at 501 West Columbia Avenue in Belleville. The agencies will receive comments on the draft operating license and federal permit for Michigan Disposal Waste Treatment Plant located in Belleville until June 22, 2007.

The draft operating license and federal permit may be reviewed at the Fred C. Fischer Library located at 167 Fourth Street in Belleville and at the Van Buren Township Hall located at 46425 Tyler Road in Belleville.

For more information, citizens may contact MDEQ staff at 517-373-2487.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

DEQ

STEVEN E. CHESTER
DIRECTOR

April 30, 2007

VIA E-MAIL and U.S. MAIL

Mr. William Harris
WEMU FM
Eastern Michigan University
Ypsilanti, Michigan 48197

Dear Mr. Harris:

SUBJECT: Public Service Announcement; Michigan Disposal Waste Treatment Plant

Enclosed is a public service announcement that the Michigan Department of Environmental Quality (MDEQ) would like to have broadcast by the WEMU radio station. The announcement is regarding a public hearing to be held on June 6, 2007, to receive comments on the draft hazardous waste management facility operating license and a federal permit for Michigan Disposal Waste Treatment Plant located in Belleville, Michigan.

Please broadcast the announcement as many times as possible before June 6, 2007. The MDEQ understands that no costs will be required from the state of Michigan for broadcasting the enclosed public service announcement. If there is a cost for broadcasting the announcement, please contact me prior to broadcasting it.

If you have any questions or comments, please contact me.

Sincerely,

Kimberly M. Tyson

Kimberly M. Tyson, P.E.
Hazardous Waste Management Unit
Hazardous Waste Section
Waste and Hazardous Materials Division
517-373-2487

Enclosure
cc/enc: Mr. Jae Lee, U.S. Environmental Protection Agency, Region 5
Mr. Steve Buda, MDEQ
Mr. Michael Busse, MDEQ
Operating License File

PUBLIC SERVICE ANNOUNCEMENT

Draft Hazardous Waste Management Facility Operating License Renewal For Michigan Disposal Waste Treatment Plant

The Michigan Department of Environmental Quality and the U.S. Environmental Protection Agency will hold a public hearing on Wednesday, June 6, 2007 at 7:00 pm in the Belleville High School Mini Auditorium located at 501 West Columbia Avenue in Belleville. The agencies will receive comments on the draft operating license and federal permit for Michigan Disposal Waste Treatment Plant located in Belleville until June 22, 2007.

The draft operating license and federal permit may be reviewed at the Fred C. Fischer Library located at 167 Fourth Street in Belleville and at the Van Buren Township Hall located at 46425 Tyler Road in Belleville.

For more information, citizens may contact MDEQ staff at 517-373-2487.

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

DEQ

STEVEN E. CHESTER
DIRECTOR

April 30, 2007

RECEIVED
MAY 09 2007

VIA E-MAIL and U.S. MAIL

Ms. Pam Wooley
WWJ Radio
26495 American Drive
Southfield, Michigan 48034

Dear Ms. Wooley:

SUBJECT: Public Service Announcement; Michigan Disposal Waste Treatment Plant

Enclosed is a public service announcement that the Michigan Department of Environmental Quality (MDEQ) would like to have broadcast by the WWJ radio station. The announcement is regarding a public hearing to be held on June 6, 2007, to receive comments on the draft hazardous waste management facility operating license and a federal permit for Michigan Disposal Waste Treatment Plant located in Belleville, Michigan.

Please broadcast the announcements as many times as possible before June 6, 2007. The MDEQ understands that no costs will be required from the state of Michigan for broadcasting the enclosed public service announcement. If there is a cost for broadcasting the announcement, please contact me prior to broadcasting it.

If you have any questions or comments, please contact me.

Sincerely,

Kimberly M. Tyson

Kimberly M. Tyson, P.E.
Hazardous Waste Management Unit
Hazardous Waste Section
Waste and Hazardous Materials Division
517-373-2487

Enclosure
cc/enc: Mr. Jae Lee, U.S. Environmental Protection Agency, Region 5
Mr. Steve Buda, MDEQ
Mr. Michael Busse, MDEQ
Operating License File

FACT SHEET

Proposed Relicensing of

Michigan Disposal Waste Treatment Plant
Hazardous Waste Storage and Treatment Facility
Belleville, Michigan

MID 000 724 831

May 3, 2007

Michigan Department of Environmental Quality
Waste and Hazardous Materials Division

BASIS FOR PROPOSED OPERATING LICENSE ISSUANCE

The Michigan Department of Environmental Quality (MDEQ) proposes to reissue a hazardous waste management facility operating license (License) to Michigan Disposal Waste Treatment Plant (MDWTP) for the continued operation of its hazardous waste storage and treatment facility located at 49350 North I-94 Service Drive in Belleville, Michigan. Simultaneously, the U.S. Environmental Protection Agency (U.S. EPA) proposes to issue a federal permit to MDWTP authorizing the management of hazardous waste not yet regulated under the state program. Section I of this Fact Sheet describes the state and federal programs established to regulate hazardous waste and to permit hazardous waste treatment, storage, and disposal facilities.

The provisions of R 299.9518 of the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), require the MDEQ to deny an application for a License for the following reasons:

1. The facility has not been constructed according to the plans approved by the MDEQ, the requirements of Part 111 or its rules, or the stipulations and conditions of the approved construction permit.

2. The construction or operation of the facility presents a hazard to public health or the environment.

3. The applicant has not submitted sufficiently detailed or accurate information to enable the MDEQ to make reasonable judgments as to whether the license should be granted.

Based on the review of the MDWTP License renewal application and numerous site inspections and audits, MDEQ staff proposes the License be issued based on the following conclusions:

1. The facility has been constructed and operated in accordance with approved plans and applicable rules. Section II of this Fact Sheet describes the site, facility design, prior licensing, and the MDEQ audit activities.

2. The facility does not, at this time, present a hazard to public health or the environment. This conclusion is based on environmental monitoring of air and groundwater conducted by MDWTP and audited by the MDEQ, and compliance inspections conducted by MDEQ staff. Section III of this Fact Sheet describes the waste that may be managed at the facility and the environmental monitoring conducted by MDWTP.

3. The application submitted by MDWTP is sufficiently detailed to demonstrate that the facility's design and operation complies with the applicable technical standards. In addition to the standard and general facility operating conditions contained in all operating licenses, the draft License contains conditions specific to MDWTP's storage and treatment activities. A summary and explanation of these conditions is included in Section II.C. of this Fact Sheet. The portions of the License application that describe in detail how MDWTP will comply with certain regulations have been attached to the draft License as enforceable documents. Such attachments include, but are not limited to, the Waste Analysis Plan, Inspection Schedule, Personnel Training Program, Contingency Plan, Closure Plan, Environmental Monitoring Programs, and Corrective Action Program.

MDWTP has been found to be out of compliance with certain provisions of Part 111 during its operating life as shown in the Compliance Summary, Attachment 1. MDWTP has, however, generally been responsive in correcting the violations that have been cited. Currently, MDWTP has three open violations. The MDEQ is working with MDWTP to resolve these violations prior to license reissuance.

Although the MDEQ believes it has done a thorough job of reviewing the MDWTP application for the License, the MDEQ is seeking public input on the issuance of this License. This ensures that the MDEQ will benefit from any information the public may have relevant to the proposed action. Section IV of this Fact Sheet describes the public participation process.

I. INTRODUCTION

Part 111 was passed by the Michigan Legislature to regulate the management of hazardous waste from generation to disposal. Likewise, Subtitle C of the Solid Waste Disposal Act, as amended, Title 42 of the United States Code, Section 6901, *et seq.* (commonly known as the Resource Conservation and Recovery Act of 1976, as amended [RCRA]), was passed by the U.S. Congress to regulate hazardous waste nationwide. The RCRA was amended substantially by the Hazardous and Solid Waste Amendments of 1984, as amended (HSWA).

Both the RCRA and Part 111 establish a permit system governing the treatment, storage, and disposal of hazardous wastes. The RCRA allows the states to obtain authorization to issue a state hazardous waste management facility operating license in lieu of a federal permit. Effective December 27, 1985, the state of Michigan amended its hazardous waste management administrative rules to be equivalent to those under the RCRA and applied to the U.S. EPA for authorization. In October 1986 Michigan was granted authorization to administer all portions of the RCRA Program, except those under the HSWA.

Because Michigan is not authorized to issue permits that address all of the HSWA requirements, the MDEQ and U.S. EPA will continue to issue separate permits to hazardous waste facilities. The federal permit will, however, be simplified, and the two agencies will, to the extent possible, coordinate the review and issuance of the permits. The RCRA permit addresses the management of newly-regulated hazardous waste. The duration of both the state License and the RCRA permit will be ten years.

II. DESCRIPTION OF THE FACILITY

A. Site Description

The site is located at 49350 North I-94 Service Drive in the city of Belleville and the county of Wayne. This site occupies approximately 4.82 acres of land. The general geographic location of this site is shown in the attached Figure 1. This site is bordered to the north, west, and east by the Wayne Disposal, Incorporated, Master Cell VI and to the south by I-94 Service Drive. The site boundaries, buildings, and support facilities are shown in the attached Figure 2.

Hazardous waste is shipped to the site in 55-gallon drums or larger containers, portable tanks, or tank trucks. Hazardous waste is stored in licensed container storage areas and tanks.

This License authorizes the continued operation of five hazardous waste container storage areas, seventeen hazardous waste storage tanks, and eight hazardous waste treatment tanks (see Figure 2). The five hazardous waste container storage areas are referred to as the North Container Storage Area (NCSA), East Container Storage Area (ECSA), Southeast Container Storage Area (SECSA), East Treatment Bay (ETB), and West Treatment Bay (WTB). The NCSA is located north of the treatment plant. The ECSA is located directly east of the treatment plant. The SECSA is located approximately 350 feet southeast of the treatment plant. The ETB and WTB are located directly in front of the treatment tanks.

On February 24, 2005, the U.S. EPA promulgated a rule listing K181, with an effective date of August 23, 2005 (70 Federal Register, Pages 9137-9180), as newly-listed hazardous waste pursuant to HSWA authority. The K181 waste code represents nonwastewaters from the production of dyes and/or pigments. Rules promulgated pursuant to HSWA authority take effect in all states regardless of their authorization status. Michigan is not yet authorized to regulate such waste, therefore, until Michigan is authorized, the U.S. EPA must regulate the management of the newly-identified hazardous wastes at the facility.

B. Prior Licensing and Facility Design

The current MDWTP Part 111 License was issued on September 30, 1999. That License expired on September 30, 2004. MDWTP submitted a timely reapplication, therefore, has been allowed to continue operating these units under the conditions of the September 30, 1999, License until the new License is issued. This extension is allowed by the Michigan Administrative Procedures Act, 1969 PA 306, as amended.

MDWTP operates hazardous waste storage and treatment units for wastes generated at off-site facilities. These units are designed for the storage of hazardous waste in containers and tanks and treatment of hazardous waste in tanks. All waste handling areas include secondary containment to prevent a release to the environment in the event of a spill or leakage.

The NCSA is 227 feet long, from west to east, and 50 feet wide, from north to south. This unit is enclosed by a roof, surrounding walls, and a concrete base, which is protected by Xypex® coating to ensure that it is not damaged by spills or leaks. This unit is designed to hold a maximum of 1,500 containers or 82,500 gallons of containerized waste. Leaks and spills will be collected in a drainage trench that runs along the north side of the storage area. Run on and runoff is prevented by the area being enclosed.

The ECSA is 80 feet long, from west to east, and 112 feet wide, from north to south. This unit is located outside, has an irregular shape due to the presence of the tank farm in the northeast corner, and has a concrete base, which is protected by Xypex® coating to ensure that it is not damaged by spills or leaks. This unit is designed to hold a maximum of 600 containers or 33,000 gallons of containerized waste. Run on is prevented by retaining walls on the north and east sides and an elevation difference along the south side. Runoff is prevented by an approximately one percent slope to the east and north, combined with a drainage trench along the east retaining wall.

The SECSA is 435 feet long, from west to east, and 180 feet wide, from north to south. This unit is located outside and consists of an asphalt base, which is sloped toward two catch basins. Leaks, spills, and precipitation are directed to the catch basins. Liquids accumulated in the catch basins are pumped to the on-site wastewater treatment plant via a double contained pipe. This unit is designed to hold 900 cubic yards or 181,000 gallons. No waste containing free liquids may be stored in this unit until the upgrades proposed in the renewal application are complete. Large containers such as roll-off boxes, dump trailers, and box vans containing smaller containers are stored in this unit.

The ETB and WTB are approximately 67 feet long, from west to east, and 54 feet wide, from north to south. These units are located inside of the treatment building and consist of concrete bases. An abrasion resistant concrete topping material, Mastertop®Anvil-Top® 300, has been applied to the concrete bases to reduce the surface wear caused by moving backhoes and loaders in the bays. These units are licensed to temporarily stage a maximum number of 100 containers that are difficult to empty prior to the drums being crushed by facility equipment. Containers may be staged in the bays for no more than one eight-hour shift. At no time shall the number of containers in storage and staging in the NCSA, ECSA, ETB, and WTB exceed 1,500 containers or 82,500 gallons.

Most of the hazardous waste tanks are constructed of mild steel, except Tanks 25 and 27 that are constructed of fiberglass. Vertical cylindrical steel and fiberglass tanks are used for storage, and rectangular steel in-ground tanks are used for treatment.

A total volume of 649,880 gallons of hazardous waste may be stored in seventeen tanks at the facility. Three 20,000-gallon lime storage silos designated as Tanks 2, 3, and 6 are used to store dry hazardous waste dust. These tanks are located inside the treatment building and equipped with ultrasonic level indicators to prevent overfilling. Eight steel rectangular tanks designated as Tanks A, B, C, D, E, F, G, and H are used for treating hazardous waste. These tanks are designed as steel tanks within a concrete containment structure, which provides secondary containment. These tanks are continuously monitored by plant personnel during loading to ensure that no spills occur and that adequate freeboard is maintained at all times.

Four steel cylindrical tanks designated as Tanks 16, 17, 18, and 19 along with two fiberglass vertical tanks designated as Tanks 25 and 27 are used to store liquids, sludges, and slurries awaiting treatment. These tanks are located in the tank farm in the northeast corner of the ECSA and are each equipped with high level indicator alarms to prevent overfilling. The secondary containment for these tanks is provided by a concrete floor and concrete walls 2.6 feet high. The concrete in this unit has been coated with Elastoliner® to prevent any spills or leaks from damaging the concrete.

MDWTP operates two pugmill mixers designated as Tanks 14 and 15. These tanks are flow-through devices that have no storage or treatment capacity specified in the License.

Tank 14 receives lime or cement kiln dusts from Tanks 2 and 3; receives liquids, sludges, and slurries from Tanks 16, 17, 18, 19, 25, and 27; and discharges a waste slurry to treatment Tanks A, B, C, and D. Tank 15 receives dusts from Tank 6; receives liquids, sludges, and slurries from Tanks 16, 17, 18, 19, 25, and 27; and discharges a waste slurry to treatment Tanks E, F, G, and H.

Hazardous waste treatment conducted at the facility is primarily stabilization. Some wastes may require pretreatment such as deactivation, chemical oxidation, and chemical reduction. MDTWP may treat 576,000 gallons of waste per day. After treatment, waste is analyzed for appropriate parameters. If the waste meets all land disposal regulations, it is sent to a licensed landfill for disposal. If the waste is not acceptable for land disposal, it is returned to the treatment process or sent off site to another treatment facility.

The License will also allow MDWTP to treat hazardous debris by using microencapsulation and macroencapsulation immobilization technologies. Microencapsulation involves stabilization of hazardous debris such that the leachability of hazardous contaminants is reduced. This treatment occurs in the treatment tanks. After treatment, the waste is sent to a licensed landfill for disposal. Macroencapsulation involves completely encapsulating the debris with an inert polyethylene material that is resistant to degradation by the debris and debris contaminants managed by MDWTP and the wastes, leachate, or microbes with which it will come into contact once landfilled in a licensed hazardous waste cell. Debris is placed in one of the treatment tanks or directly into a macroencapsulation unit, which is made of approximately one-inch thick polyethylene using an injection molding process to create a rigid, one-piece "tub" that fits within a roll-off box or is self-supporting. In the treatment tanks, the debris is mixed with inert filler materials, such as cement kiln dust, sand, solidified nonhazardous waste, waste treated to the land disposal restriction standards, or other nonbiodegradable sorbent or fixation media, to fill the void spaces when encapsulated and to provide cushioning material. The debris is removed from the treatment tank and placed into a macroencapsulation unit. The unit is transported to a licensed landfill for disposal.

Particulate emissions from the processing of waste in treatment Tanks A, B, C, and D are captured by a baghouse located on the west side of the treatment building. Emissions from the processing of Subpart CC volatile organic waste in treatment Tanks E, F, G, and H are captured by a thermal oxidation unit located on the east side of the treatment building.

C. Facility-Specific License Conditions

The following items are facility-specific License conditions for the hazardous waste management units (WMUs):

1. Conditions for Storage in Containers: Condition III.B. specifies locations for container storage and limits the storage capacity to 264,300 gallons.

2. Conditions for Storage in Containers: Condition III.C. identifies macroencapsulation as the only treatment process that may occur in containers.

3. Conditions for Storage in Containers: Condition III.D. identifies the locations and other conditions for waste bulking and consolidation.

4. Conditions for Storage in Tanks: Condition IV.B. limits tank storage capacity to 649,880 gallons.

5. Conditions for Treatment in Tanks: Condition IV.C. limits treatment capacity in tanks to 576,000 gallons per day.

6. Conditions for Environmental Monitoring at the facility: Conditions V.A. and V.B. require the licensee to conduct a Groundwater Monitoring Program (License, Attachment 11) and an Ambient Air Monitoring Program (License, Attachment 12).

7. Conditions for Corrective Action at the facility: Conditions VI.C. identifies the WMUs at the facility. Most WMUs will require corrective action upon final closure of the facility. This condition also requires the licensee to notify the MDEQ within 30 days of discovery of a new WMU or a release of a contaminant from a new WMU and specifies the procedures for conducting corrective action at that WMU.

III. ENVIRONMENTAL IMPACT

A. Wastes Stored and Disposed

MDWTP stores and treats both characteristic and listed hazardous wastes as well as nonhazardous wastes. To ensure proper treatment and safe storage, limitations have been placed on the solvent content and the flashpoint of the wastes. Further, no reactive wastes may be accepted for treatment or storage in any tanks, however, reactive wastes in containers may be accepted for transshipment to another treatment or disposal facility. A complete list of wastes acceptable for storage or treatment is listed in the License, Attachment 8.

B. Groundwater Monitoring

MDWTP will continue to monitor groundwater at the facility. Six groundwater wells will be sampled four times per year to determine if hazardous waste or hazardous waste constituents are leaking into the groundwater. MDWTP will also be required to conduct quarterly monitoring of static groundwater elevations in the shallow sand unit, where present, at the facility to confirm that groundwater flow is toward the south sedimentation basin and not migrating beyond the MDWTP property boundary.

C. Ambient Air Monitoring

MDWTP will continue to monitor ambient air quality at six stations around the perimeter of the site. Samples collected from the stations will be analyzed for polychlorinated biphenyls, metals, and volatile organic compounds. Ambient air monitoring data is reported to the MDEQ, Air Quality Division and Waste and Hazardous Materials Division.

IV. PUBLIC PARTICIPATION

A. Public Comment Procedures

The purpose of public participation is to ensure that the interested public has knowledge of the MDEQ and U.S. EPA proposed actions and to provide an opportunity to comment on those actions. In addition, the process ensures that the MDEQ and U.S. EPA have the opportunity to benefit from any information the public may have relevant to the proposed actions. Comments may be submitted in writing to the addressee listed in Section IV.C. of this Fact Sheet between May 3, 2007, and June 22, 2007, or comments may be presented at the public hearing. The public comment and public hearing procedures that will be followed are stated in the Michigan Administrative Code, R 299.9514 and R 299.9515, and in Title 40 of the Code of Federal Regulations, Sections 124.11 and 124.12.

The public hearing on the draft License and draft RCRA permit will be held on June 6, 2007, at the Belleville High School Mini Auditorium, located at 501 West Columbia Avenue, in Belleville, Michigan. The hearing will begin at 7:00 p.m. and continue until all registered persons have had the opportunity to present their comments for the record. All persons attending the public hearing who intend to speak are requested to register by 7:30 p.m.

The public hearing location is accessible to handicapped persons. Handicappers or any person requiring specialized accommodations or assistance, such as an interpreter for the deaf, meeting materials in Braille, large print, or on audio tape, should contact Ms. Lindacarol Leiter at the MDEQ address given in Section IV.C. of this Fact Sheet or at 517-373-9875 before May 24, 2007.

After the public hearing and the close of the public comment period, the MDEQ will decide whether, or not, to issue the final License. Written comments submitted during the public comment period and statements provided at the public hearing will be considered by the Waste and Hazardous Materials Division Chief in the formulation of the final decision. Responses to written comments and oral statements will be included in the record supporting the final decision of the MDEQ. The final License decision by the MDEQ will be communicated to the applicant, each person who submitted a written comment during the public comment period, persons providing oral statements at the public hearing, and all persons on the facility mailing list.

B. Locations of Available Information

The administrative record for the draft License is on file at the MDEQ, Waste and Hazardous Materials Division (WHMD), Constitution Hall, Atrium North, 525 West Allegan Street, Lansing, Michigan 48933 (contact Ms. Kimberly M. Tyson at 517-373-2487). In addition, copies of the draft License and draft RCRA permit, the Fact Sheet, and the License renewal application are available for review at the MDEQ, Southeast Michigan District Office, WHMD, located at 27700 Donald Court, Warren, Michigan 48092 (contact Mr. Mike Busse at 586-753-3839); at the Van Buren Charter Township Hall located at 46425 Tyler Road, in Belleville; at the Fred C. Fischer Library located at 167 Fourth Street, in Belleville; and at the U.S. EPA, Region 5, Program

Management Branch (DU-7J), 77 West Jackson Boulevard, Chicago, Illinois 60604 (contact Mr. Jae Lee at 1-800-621-8431, Extension 63781).

C. Contact Person

Address comments and requests regarding the draft License to:

Ms. Kimberly M. Tyson, P.E.
Waste and Hazardous Materials Division
Michigan Department of Environmental Quality
P.O. Box 30241
Lansing, Michigan 48909-7741

Address comments and requests regarding the draft RCRA permit to:

Mr. Jae Lee (DU-7J)
Program Management Branch
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Written comments concerning the draft License or draft RCRA permit should include the name and address of the writer, a concise statement of the basis for the comments, and the supporting relevant facts upon which the comments are based. All further requests for information, including requests for copies of the draft License, draft RCRA permit, or the Fact Sheet should be made to Ms. Tyson. Written comments must be postmarked no later than June 22, 2007.

Attachment 1
Compliance Summary

392708 / MID000724831 MICHIGAN DISPOSAL WASTE TREATMENT PLANT

Violations

Date Determined	Closure Date	List of Citations	Program Type
3/8/2007		601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities; 605(1) - TSD: general facility standards ;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/8/2007		519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
1/3/2007		701(1) - TSD: Violation of Financial Requirements;	111/121 - Hazardous Waste/Liquid Industrial Waste
9/20/2006	11/3/2006	605(1) - TSD: general facility standards ;	111/121 - Hazardous Waste/Liquid Industrial Waste
11/21/2005	12/19/2005	601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities;	111/121 - Hazardous Waste/Liquid Industrial Waste
9/15/2005	11/4/2005	604(1) - TSD: run-on, run-off, and prevent waste from escaping.;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/15/2005	4/4/2005	601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/15/2005	4/4/2005	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
11/10/2004	3/4/2005	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
11/10/2004	3/4/2005	601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities;	111/121 - Hazardous Waste/Liquid Industrial Waste
110 records found. Displaying page 1 of 11			1 2 3 4 5 6 7 8 9 10 ...

Activities on record are recorded by site. A site is a geographic location. Owners and/or operators may have changed throughout

Attachment 1
Compliance Summary

WDS Online
Site ID
Site Identification
CME
Compliance Actions
Evaluations
Violations
Manifests
Manifests
MORs
MORs
PCA
Authorized Waste Codes
Corrective Actions
Permitting
Solid Waste
Applications
Disposal Areas
Financial Assurances
Operating Licenses
QMRs
User Charges
User Charges

392708 / MID000724831 MICHIGAN DISPOSAL WASTE TREATMENT PLANT

Violations

Date Determined	Closure Date	List of Citations	Program Type
11/10/2004	3/4/2005	12113(1) - LIW: containers stored protected, closed, free of residue;	111/121 - Hazardous Waste/Liquid Industrial Waste
9/16/2004	12/7/2004	601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities; 605(1) - TSD: general facility standards ;	111/121 - Hazardous Waste/Liquid Industrial Waste
9/16/2004	12/7/2004	606(1) - TSD: preparedness and prevention rules ;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/18/2004	12/6/2004	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/18/2004	12/6/2004	604(1) - TSD: run-on, run-off, and prevent waste from escaping.;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/18/2004	12/6/2004	601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/18/2004	12/6/2004	606(1) - TSD: preparedness and prevention rules ;	111/121 - Hazardous Waste/Liquid Industrial Waste
4/1/2004	4/1/2004	607(1) - TSD: contingency plan; 607 (2) - TSD: notification upon fire, explosion, or qualifying release ;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/10/2004	5/21/2004	601(2) - TSD: violation of 40 CFR Part 264 for permitted facilities;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/10/2004	5/21/2004	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
110 records found. Displaying page 2 of 11			1 2 3 4 5 6 7 8 9 10 ...

Activities on record are recorded by site. A site is a geographic location. Owners and/or operators may have changed throughout history of the site. Refer to the site information to determine the owner and/or operator at the time of the action you are viewing.

Attachment 1
Compliance Summary

392708 / MID000724831 MICHIGAN DISPOSAL WASTE TREATMENT PLANT

Violations

Date Determined	Closure Date	List of Citations	Program Type
11/7/2003	1/28/2004	MI00002595 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
11/7/2003	1/28/2004	604(1) - TSD: run-on, run-off, and prevent waste from escaping.;	111/121 - Hazardous Waste/Liquid Industrial Waste
11/7/2003	1/28/2004	606(1) - TSD: preparedness and prevention rules ;	111/121 - Hazardous Waste/Liquid Industrial Waste
8/22/2003	5/13/2004	615(1) - TSD: 40 CFR tank requirements; 615(3) - TSD: tank systemcorrosion protection.;	111/121 - Hazardous Waste/Liquid Industrial Waste
4/17/2003	3/9/2004	627(1) - TSD: land disposal restrictions.;	111/121 - Hazardous Waste/Liquid Industrial Waste
4/17/2003	3/9/2004	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/14/2002	6/14/2002	607(2) - TSD: notification upon fire, explosion, or qualifying release ;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/12/2002	6/12/2002	607(2) - TSD: notification upon fire, explosion, or qualifying release ;	111/121 - Hazardous Waste/Liquid Industrial Waste
5/3/2002	5/13/2004	615(1) - TSD: 40 CFR tank requirements;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/20/2002	5/14/2002	614(1) - TSD: container storage;	111/121 - Hazardous Waste/Liquid Industrial Waste
110 records found. Displaying page 3 of 11			1 2 3 4 5 6 7 8 9 10 ...

Activities on record are recorded by site. A site is a geographic location. Owners and/or operators may have changed throughout history of the site. Refer to the site information to determine the owner and/or operator at the time of the action you are viewing.

Attachment 1
Compliance Summary

Department of Environmental Quality

Michigan.gov

Michigan.gov | DEQ Home | WDS Home | Online Services | Programs | Site Map | Contact DEQ

Search

WDS Quick Search ··· What's this? Advanced Search Result List

WDS Online

Site ID
- Site Identification

CME
- Compliance Actions
- Evaluations
- Violations

Manifests
- Manifests

MORs
- MORs

PCA
- Authorized Waste Codes
- Corrective Actions
- Permitting

Solid Waste
- Applications
- Disposal Areas
- Financial Assurances
- Operating Licenses
- QMRs

User Charges
- User Charges

392708 / MID000724831 MICHIGAN DISPOSAL WASTE TREATMENT PLANT

Violations

Date Determined	Closure Date	List of Citations	Program Type
2/6/2002	7/1/2002	607(2) - TSD: notification upon fire, explosion, or qualifying release ;	111/121 - Hazardous Waste/Liquid Industrial Waste
2/6/2002	7/1/2002	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
12/27/2001	12/27/2001	519(1) - TSD: construct/operate/maintain according to rules and permit or license.;	111/121 - Hazardous Waste/Liquid Industrial Waste
12/11/2001	5/3/2002	615(3) - TSD: tank systemcorrosion protection.;	111/121 - Hazardous Waste/Liquid Industrial Waste
9/19/2001	11/30/2001	302(1) - Generator: characterization requirement;	111/121 - Hazardous Waste/Liquid Industrial Waste
7/16/2001	8/29/2001	MI0000294 - INACTIVE - No Regulatory citation identified;	115 - Solid Waste
6/27/2001	8/2/2001	MI00002602 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/23/2001	3/5/2003	MI00002602 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
2/14/2001	2/14/2001	MI00002625 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
8/4/2000	11/2/2000	MI00002625 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
110 records found. Displaying page 4 of 11			1 2 3 4 5 6 7 8 9 10 ...

Activities on record are recorded by site. A site is a geographic location. Owners and/or operators may have changed throughout history of the site. Refer to the site information to determine the owner and/or operator at the time of the action you are viewing.

Attachment 1
Compliance Summary

392708 / MID000724831 MICHIGAN DISPOSAL WASTE TREATMENT PLANT

Violations

Date Determined	Closure Date	List of Citations	Program Type
6/21/2000	10/19/2000	MI00002595 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/21/2000	10/19/2000	MI00002602 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
6/21/2000	10/19/2000	MI00002625 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/29/2000	7/11/2000	MI00002625 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
3/28/2000	8/7/2000	MI00002625 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
2/23/2000	1/9/2001	MI00002614 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
2/23/2000	1/9/2001	MI00002625 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
2/3/2000	7/31/2000	MI00002614 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
12/22/1999	12/22/1999	MI00002629 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
9/28/1999	2/8/2002	MI00002630 - INACTIVE - No regulatory citation identified;	111/121 - Hazardous Waste/Liquid Industrial Waste
110 records found. Displaying page 5 of 11			1 2 3 4 5 6 7 8 9 10 ...

Activities on record are recorded by site. A site is a geographic location. Owners and/or operators may have changed throughout history of the site. Refer to the site information to determine the owner and/or operator at the time of the action you are viewing.

Figure 1
Geographic Location

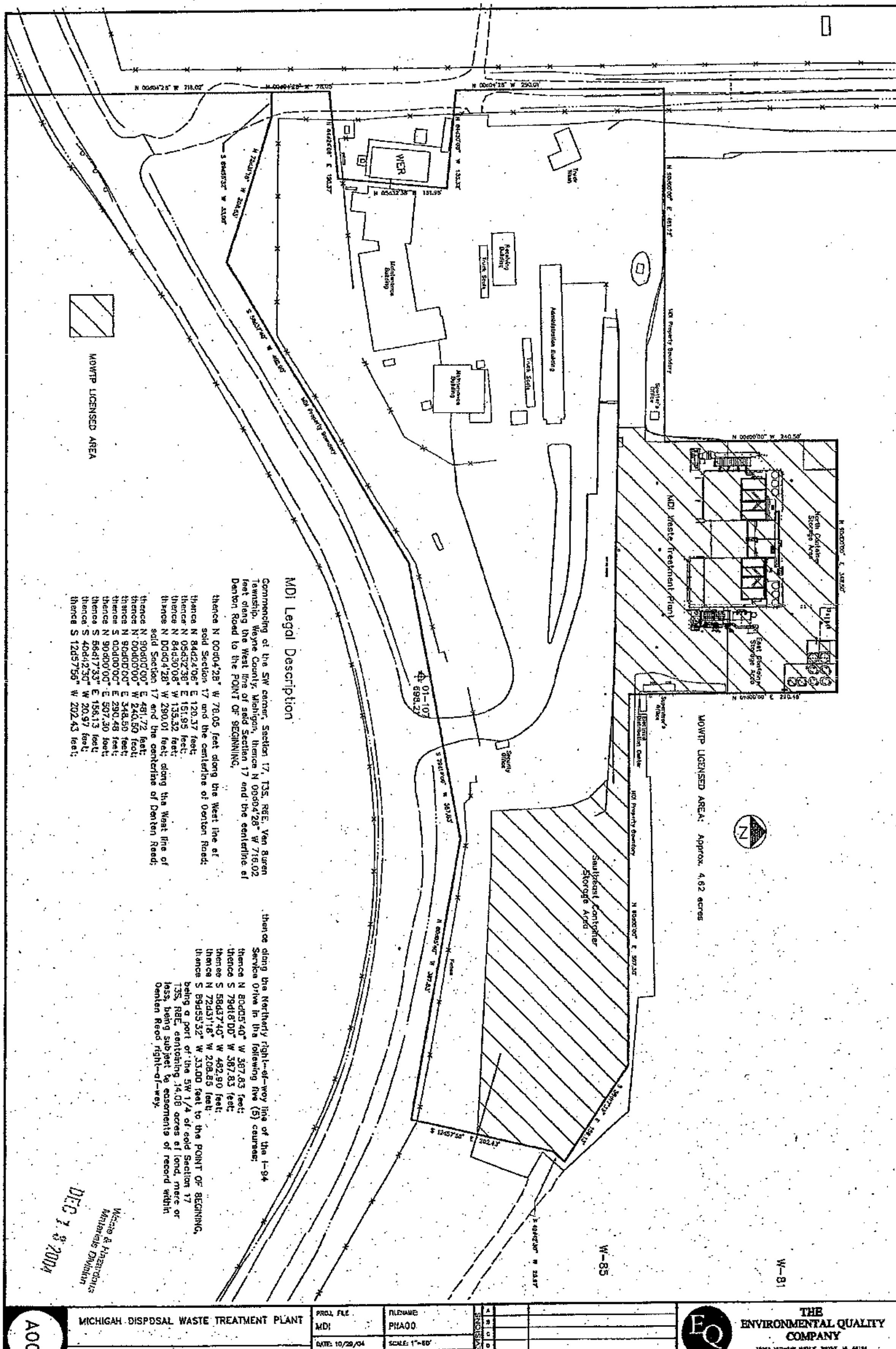
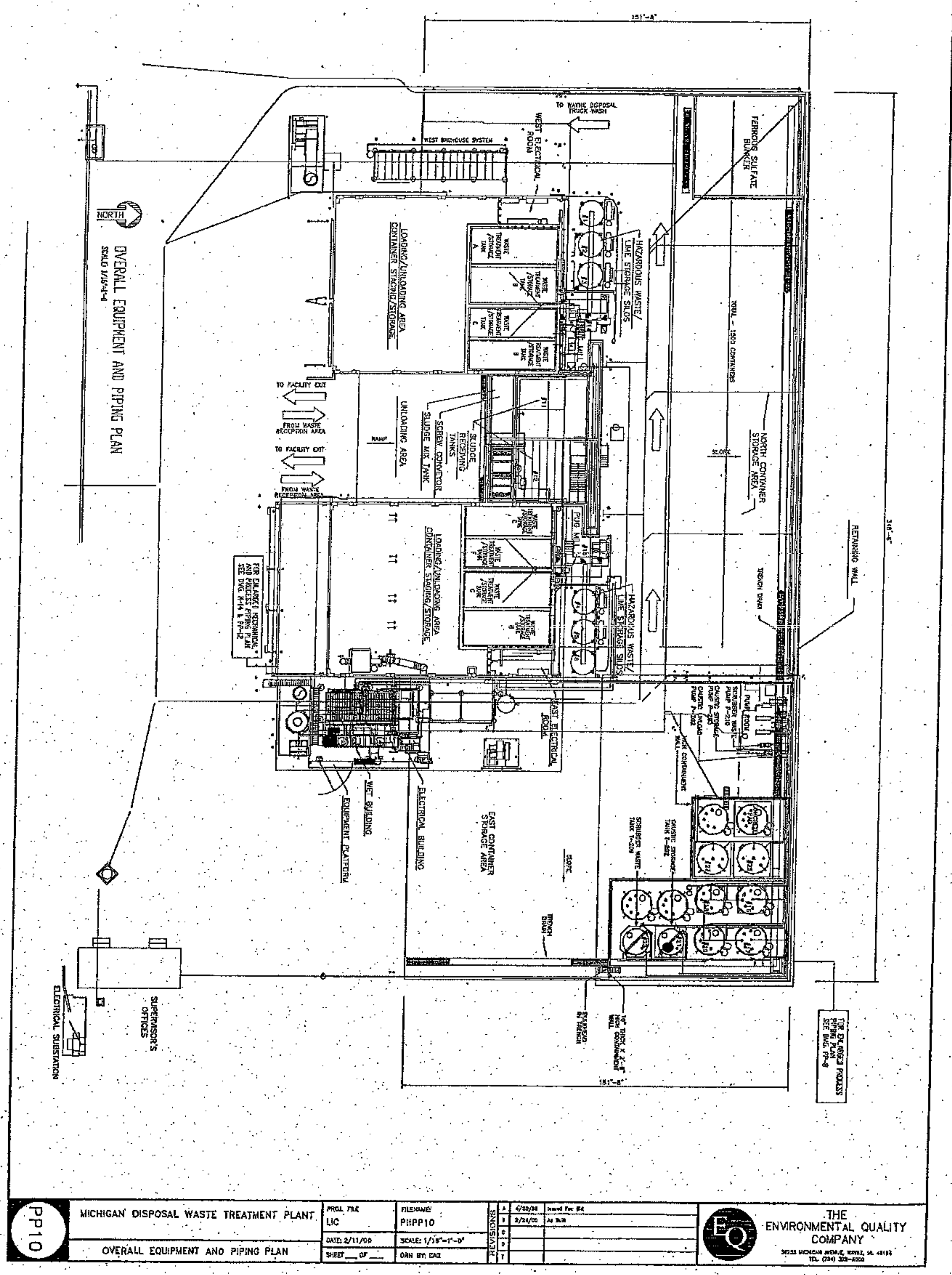


Figure 2
Facility Drawing



DEQ

State of Michigan
Department of Environmental Quality
HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE

NAME OF LICENSEE: Michigan Disposal Waste Treatment Plant

NAME OF OWNER: EQ – The Environmental Quality Company

NAME OF OPERATOR: EQ – The Environmental Quality Company

NAME OF TITLEHOLDER OF LAND: Wayne Disposal, Incorporated

FACILITY NAME: Michigan Disposal Waste Treatment Plant

FACILITY LOCATION: 49350 North I-94 Service Drive
Belleville, Michigan 48111

EPA IDENTIFICATION NUMBER: MID 000 724 831 EFFECTIVE DATE: August __, 2007

REAPPLICATION DATE: February, 2017 EXPIRATION DATE: August __, 2017

DRAFT 5/3/07

AUTHORIZED ACTIVITIES
Pursuant to Part 111 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), being §§324.11101 to 324.11153 of the Michigan Compiled Laws, and the hazardous waste management administrative rules (hereafter called the "rules") promulgated thereunder, being R 299.9101 *et seq.* of the Michigan Administrative Code, by the Michigan Department of Environmental Quality (MDEQ), an operating license (hereafter called the "license") is issued to Michigan Disposal Waste Treatment Facility (MDWTP) (hereafter called the "licensee") to operate a hazardous waste management facility (hereafter called the "facility") located at latitude 42°13'30"N and longitude 083°31'00"W. The licensee is authorized to conduct the following hazardous waste management activities:

X STORAGE	X TREATMENT	☐ DISPOSAL	☐ POSTCLOSURE
X Container	X Container	☐ Landfill	☐ Tank
X Tank	X Tank	☐ Land Application	☐ Surface Impoundment
☐ Waste Pile	☐ Surface Impoundment	☐ Surface Impoundment	☐ Landfill
☐ Surface Impoundment	☐ Incinerator		☐ Waste Pile
☐ Drip Pad	☐ Other:		

APPLICABLE REGULATIONS AND LICENSE APPROVAL
The conditions of this license were developed in accordance with the applicable provisions of the rules, effective December 16, 2004. The licensee shall comply with all terms and conditions of this license. This license consists of the 26 pages of conditions attached hereto along with Attachments 1 through 13 and the applicable regulations contained in R 299.9101 through R 299.11008, as specified in the license. For purposes of compliance with this license, applicable rules are those which are in effect on the date of issuance of this license in accordance with R 299.9521(3)(a).

This license is based on the information in the license application submitted on April 30, 2004 and any subsequent amendments (hereafter referred to as "the application"). Pursuant to R 299.9519(11)(c), the license may be revoked if the licensee fails, in the application or during the license issuance process, to disclose fully all relevant facts or, at any time, misrepresents any relevant facts. As specified in R 299.9519(1), the facility shall be constructed, operated, and maintained in accordance with Part 111 of Act 451, the rules, and this license.

This license is effective on the date of issuance and shall remain in effect for 10 years from the date of issuance, unless revoked pursuant to R 299.9519 or continued in effect as provided by the Michigan Administrative Procedures Act, 1969 PA 306, as amended (Act 306).

Issued this __ day of August, 2007

by: ______________________________
George W. Bruchmann, Chief
Waste and Hazardous Materials Division

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

MID 000 724 831

HAZARDOUS WASTE MANAGEMENT FACILITY OPERATING LICENSE

TABLE OF CONTENTS

LIST OF ATTACHMENTS

PART I

STANDARD CONDITIONS

A. TERMINOLOGY AND REFERENCES

Throughout this license, "WHMD" means the Waste and Hazardous Materials Division within the MDEQ responsible for administering Part 111 of Act 451 and the rules. Throughout this license, "Director" means the Director of the MDEQ or the Director's duly authorized designee such as the WHMD Chief. All of the provisions of Title 40 of the Code of Federal Regulations (CFR) referenced in this license are adopted by reference (ABR) in R 299.11003.

B. EFFECT OF LICENSE

Except as otherwise provided by law, any treatment, storage, or disposal of hazardous waste not specifically authorized in this license is prohibited. Issuance of this license does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of federal, state, or local law or regulations {R 299.9516(8)}; nor does it obviate the necessity of obtaining such permits or approvals from other units of government as may be required by law. Compliance with the terms of this license does not constitute a warranty or representation of any kind by the MDEQ, nor does the MDEQ intend that compliance with this license constitutes a defense to any order issued or any action brought under Act 451 or any other applicable state statute or Section 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act 1980 PL 96-510 (CERCLA) (Title 42 of the United States Code (U.S.C.), Section 9606(a)), the Resource Conservation and Recovery Act of 1976, as amended (RCRA), and its rules, or any other applicable federal statute. The licensee, however, does not represent that it will not argue that compliance with the terms of this license may be a defense to such future regulatory actions. Each attachment to this license is a part of, and is incorporated herein, this license and is deemed an enforceable part of the license.

C. SEVERABILITY

The provisions of this license are severable, and if any provision of this license, or the application of any provision of this license to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this license shall not be affected thereby.

D. RESPONSIBILITIES

1. The licensee shall comply with Part 111 of Act 451, the rules, and all conditions of this license, except to the extent authorized by the MDEQ pursuant to the terms of an emergency operating license. Any license noncompliance, except to the extent authorized by the MDEQ pursuant to the terms of an emergency operating license, constitutes a violation of Part 111 of Act 451 and is grounds for enforcement action, license revocation, license modification, or denial of a license renewal application. {R 299.9521(1)(a) and (c) and (3)(a) and (b), and 40 CFR §270.30(a)}

2. If the licensee wishes to continue an activity regulated by this license after the expiration date of this license, the licensee shall submit a complete application for a new license to the WHMD Chief at least 180 days before this license expires, August __, 2017, unless an extension is granted pursuant to R 299.9510(5). To the extent the licensee makes a timely and sufficient application for renewal of this license, this license and all conditions herein will remain in effect beyond the license expiration date and shall not expire until a final decision on the application is

made by the MDEQ, and if the application is denied or the terms of the new license are limited, until the last day for applying for judicial review of the new license or a later date fixed by order of the reviewing court consistent with Section 91(2) of Act 306. {R 299.9521(1)(a) and (c) and (3)(a), and 40 CFR §270.30(b)}

3. The licensee shall comply with the conditions specified in R 299.9521(1)(b)(i) to (iii) and 40 CFR §270.30(c) to (k), (l)(2), (3), (5), (7), and (11), and (m). {Sections 11123(3), 11146(1) and (2), and 11148(1) of Act 451 and R 299.9501(1), R 299.9516, R 299.9519, R 299.9521(1)(a) and (b) and (3)(a) and (b), and R 299.9522, and R 299.9525}

4. The licensee shall give notice to the WHMD Chief as soon as possible prior to any planned physical alterations or additions to the licensed facility.

E. **SUBMITTAL DEADLINES**

When the deadline for submittals required under this license falls on a weekend or legal state holiday, the deadline shall be extended to the next regular business day. This extension does not apply to the deadline for financial mechanisms, and associated renewals, replacements, or extensions of financial mechanisms required under this license. The licensee may request extension of the deadlines for submittals required under this license. The licensee shall submit such requests at least five business days prior to the existing deadline for review and approval by the WHMD Chief. Written extension requests shall include justification for each extension. {R 299.9521(3)(a)}

PART II

GENERAL OPERATING CONDITIONS

A. GENERAL WASTE ANALYSIS

1. The licensee shall ensure that any waste managed at the facility has been properly characterized pursuant to R 299.9302, and comply with the procedures described in the Waste Analysis Plan, Attachment 1, of this license. {R 299.9605(1), and 40 CFR §264.13}

2. All combustible containers, supports, and packaging not integral to waste or reagent packaging and added to a batch treatment process shall be recorded on the batch ticket. The batch ticket is a log used to document the description and quantity of waste and reagents in a batch treatment process. The licensee shall add to each mock compatibility test tank at least one percent combustible materials to simulate the containers, supports, and packagings that are integral to waste and reagent packagings. The licensee shall record and maintain the results of the laboratory simulations in accordance with Condition II.I.1 of this license. {R 299.9606(1) and 40 CFR 264.31}

3. Wastes that are bulked and mixed, excluding empty containers, site-generated debris, or closed and intact containers of nonhazardous waste, shall be subjected to the same compatibility and waste code evaluations as applied to wastes that are mixed in the treatment tanks. Waste treatment shall only be conducted in accordance with the procedures specific in Conditions III.C. and IV.C. of this license. {R 299.9606(1) and 40 CFR 264.31}

B. SECURITY

The licensee shall comply with the barrier, surveillance, and signage requirements of R 299.9605(1) and 40 CFR §264.14.

C. GENERAL INSPECTION REQUIREMENTS

1. The licensee shall inspect the facility in accordance with the Inspection Schedule, Attachment 2, of this license, and comply with the inspection requirements of R 299.9605(1) and 40 CFR §264.15.

2. The licensee shall develop and implement a procedure to ensure compliance with the requirements of R 299.9605(2) regarding transport vehicles and other containers leaving the facility.

D. PERSONNEL TRAINING

The licensee shall comply with the personnel training requirements of R 299.9605 and 40 CFR §264.16. The training program shall, at a minimum, cover all items in the Personnel Training Program, Attachment 3, of this license.

E. PREPAREDNESS AND PREVENTION

The licensee shall comply with the preparedness and prevention requirements of R 299.9606 and 40 CFR, Part 264, Subpart C.

F. **CONTINGENCY PLAN**

The licensee shall comply with the contingency plan requirements of R 299.9607 and 40 CFR Part 264, Subpart D. The Contingency Plan, Attachment 4, of this license and the prescribed emergency procedures shall be immediately implemented by the licensee whenever there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents that threatens or could threaten human health or the environment, or if the licensee has knowledge that a spill has reached surface water or groundwater.

G. **DUTY TO MITIGATE**

Upon notification from the WHMD Chief or his or her designee that an activity at the facility may present an imminent and substantial endangerment to human health or the environment, the licensee shall immediately comply with an order issued by the WHMD Chief pursuant to Section 11148(1) of Act 451 to halt such activity and conduct other activities as required by the WHMD Chief to eliminate the said endangerment. The licensee shall not resume the halted activity without the prior written approval from the WHMD Chief. {Section 11148 of Act 451 and R 299.9521(3)(b)}

H. **MANIFEST SYSTEM**

The licensee shall comply with the manifest requirements of R 299.9304, R 299.9305, and R 299.9608.

I. **RECORDKEEPING AND REPORTING**

1. The licensee shall comply with the written operating record and monthly operating report requirements of R 299.9609 and 40 CFR §264.73 and Part 264, Appendix I, and R 299.9610(3), respectively. The Monthly Operating Report shall report on waste shipped to the Wayne Disposal, Inc., facility and be submitted on a form provided by the WHMD Chief, or an equivalent form approved by the WHMD Chief.

2. The licensee shall comply with the biennial report requirements of R 299.9610. {R 299.9521(1)(a) and 40 CFR §270.30(l)(9)}

3. The licensee shall submit the results of all environmental monitoring required by this license and any additional environmental sampling or analysis conducted beyond that required by this license, in the form of an Environmental Monitoring Report to the WHMD Chief within 60 days after sample collection. Any increased frequency in sampling or analysis shall be indicated in the Environmental Monitoring Report. In addition, the licensee shall submit air monitoring results to MDEQ, Air Quality Division. {R 299.9521(1)(a), R 299.9521(3)(b), and 40 CFR §270.30(l)(4)}

4. The licensee shall provide environmental monitoring information or data required pursuant to this license to an authorized representative of an environmental or emergency response department of the Van Buren Township, city of Belleville, and county of Wayne, who requests such information or data and that has jurisdiction over the facility. Such information or data shall be made available on the same day the licensee forwards this information to the WHMD Chief. {R 299.9521(3)(b)}

5. The licensee shall immediately report to the WHMD Chief any noncompliance with the license that may endanger human health or the environment by doing both of the following:

(a) The licensee shall immediately notify the WHMD Chief at 517-335-2690, if the noncompliance occurs during the period 8:00 a.m. to 5:00 p.m., Monday through Friday, except state holidays, or by calling the MDEQ Pollution Emergency Alerting System (PEAS) at 1-800-292-4706 during all other times. This notice shall include the following:

(i) Information concerning the fire, explosion, release, or discharge of any hazardous waste or hazardous waste constituent that could threaten human health or the environment, that has reached surface water or groundwater, or may endanger public drinking water supplies or the environment.

(ii) A description of the occurrence and its cause, including all of the information outlined in R 299.9607(2)(a) to (i).

(b) The licensee shall also follow up the verbal notice by providing a written report to the WHMD Chief within five days after the time the licensee becomes aware of the circumstances. The written report shall contain all of the information in Condition II.I.5.(a)(i) and (ii) of this license along with a description of the noncompliance and its cause; the periods of noncompliance (including exact dates and times); whether the noncompliance has been corrected and, if not, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance and when those activities occurred or will occur. The WHMD Chief may waive the five-day written notice requirement if the licensee submits to a written report containing this information within 15 days after the time the licensee becomes aware of the circumstances.

{R 299.9521(1)(a) and R 299.9607 and 40 CFR §270.30(l)(6)}

6. The licensee shall report all other instances of noncompliance with this license, Part 111 of Act 451, the rules, and any other applicable environmental laws or rules that apply to the licensed facility, at the time monitoring reports required by this license are submitted or within 30 days, whichever is sooner. The reports shall contain the information listed in Condition II.I.5. of this license. {R 299.9521(1)(a) and 40 CFR §270.30(l)(10)}

7. The licensee may make minor modifications to the forms contained in the attachments to this license. The modifications may include changing the format, updating existing references and information, adding necessary information, and changing certification and notification information in accordance with Part 111 of Act 451 and its rules and RCRA and its regulations. The licensee shall submit the modifications to the WHMD Chief prior to implementing the use of the modified form(s). If the WHMD Chief does not reject or require revision of the modified form(s) within 14 days after receipt, the licensee shall implement use of the modified form(s) and the form(s) shall be incorporated herein as a replacement for the existing form(s).

J. CLOSURE

The licensee shall comply with the closure requirements of R 299.9613. The licensee shall close the facility in accordance with the Closure Plan, Attachment 5, of this license, all other applicable requirements of this license, and all other applicable laws. {R 299.9613 and 40 CFR, Part 264, Subpart G, except 40 CFR §§264.112(d)(1), 264.115, and 264.120}

K. **FINANCIAL ASSURANCE FOR CLOSURE**

1. On the effective date of this license, the facility closure cost estimate is $710,349. The licensee shall keep this estimate current as required under R 299.9702 and 40 CFR §264.142.

2. The licensee shall continuously maintain financial assurance for the current closure cost estimate as required under R 299.9703.

L. **FINANCIAL ASSSURANCE FOR CORRECTIVE ACTION**

1. On the effective date of this license, no cost has been identified for performing corrective action. No corrective action is being required, at this time, for the waste management units (WMUs), identified in Condition VI.C. of this license. The identified WMUs are currently operating pursuant to the act and its rules with no evidence of a release of any contaminants. Corrective action and financial assurance for corrective action may be required when the WMUs undergo final closure.

2. The licensee shall continuously maintain financial assurance for corrective action, when required, pursuant to R 299.9713.

M. **FINANCIAL REPSONSIBILITY FOR LIABILITY COVERAGE**

The licensee shall continuously maintain liability coverage for sudden and accidental occurrences, as required under R 299.9710.

N. **WASTE MINIMIZATION**

The licensee shall certify, at least annually, that the licensee has a hazardous waste minimization program in place. {R 299.9609(1)(a), 40 CFR §264.73(b)(9), and Section 3005(h) of RCRA, 42 U.S.C., Section 6925(h)}

O. LAND DISPOSAL RESTRICTIONS

The licensee shall comply with all of the requirements of 40 CFR, Part 268. {R 299.9627 and 40 CFR, Part 268}

P. AIR EMISSION STANDARDS

1. The licensee shall notify the WHMD Chief of any hazardous WMUs that become subject to the requirements of 40 CFR, Part 264, Subparts AA and BB within 30 days after the start of the regulated activity. {R 299.9630, R 299.9631, and 40 CFR, Part 264, Subparts AA and BB, which are ABR in R 299.11003}

2. The licensee shall comply with the requirements of 40 CFR, Part 264, Subpart CC regarding air emission standards for tanks and containers. {R 299.9634 and 40 CFR, Part 264, Subpart CC, which is ABR in R 299.11003}

3. The licensee shall operate the facility in a manner that minimizes odors emanating from the facility and that prevents odors which violate Part 55, Air Pollution Control, of Act 451 and the

rules promulgated pursuant thereto. A violation of Part 55 or its rules, including the issuance of a Violation Notice by the MDEQ, is a violation of this condition.

Upon receipt of a Part 55 Violation Notice from the MDEQ, the licensee shall:

(a) Investigate the operations of the facility that caused the violation.

(b) Take such actions as may be necessary to eliminate the cause of the violation provided such actions do not otherwise violate the terms and conditions of this license.

(c) Determine the changes in operations necessary to prevent a recurrence of the odor violation.

(d) Submit a written report to the WHMD Chief that documents the results of the investigation and the changes needed in the operations to avoid a recurrence.

(e) Complete such additional steps as the WHMD Chief determines are necessary to prevent recurrence of the odor.

Failure to comply with any of these steps is a violation of this license.

{R 299.9521(3)(b) and R 299.9602(1)(b)}.

Q. HAZARDOUS WASTE DELIVERY AND ON-SITE WASTE TRANSPORT REQUIREMENTS

1. All deliveries of hazardous waste to the facility shall be made in accordance with the Waste Delivery Procedures, Attachment 6, of this license. {R 299.9521(3)(b)}

2. The licensee shall provide written notification to the transportation companies frequenting the facility that:

   a) Wastes shipped to the facility must be placed into closed containers or covered during transportation. The structural integrity of the waste containers must prevent leakage while in transit.

   b) All vehicles transporting hazardous waste to or from the facility shall use Rawsonville Road to enter and exit the facility.

   c) Vehicles transporting hazardous waste to or from the facility shall neither park nor stand on the North I-94 Service Drive.

   {R 299.9521(3)(b)}

3. All vehicles transporting or holding hazardous or decharacterized waste or waste constituents, treated or untreated, while at the facility, shall be covered at all times except when sampling, loading, or unloading. Vehicles shall be uncovered no more than 15 minutes prior to such activities and shall be covered no later than 15 minutes after such activities.

4. The licensee shall maintain adequate access for ingress and egress to any portion of the facility to allow unobstructed movement of personnel and equipment in case of an emergency. {R 299.9606 and 40 CFR §264.34, which is ABR in R 299.11003}

. .. GENERAL HOUSEKEEPING

1. If any visible contamination remains on the exterior of a vehicle, the licensee shall decontaminate that vehicle to prevent the vehicle from tracking the contamination through the facility or outside the facility. {R 299.9521(3)(b)}

2. The licensee shall remove any spilled or leaked waste at the facility immediately upon detection and manage it in accordance with the requirements of Part 111 of Act 451 and its rules.

S. DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The licensee shall maintain at the facility the following documents and amendments required by this license, until closure is completed, certified by an independent registered professional engineer, and the facility is released from financial assurance requirements for closure by the Director:

1. Waste Analysis Plan, including Quality Assurance/Quality Control (QA/QC) Plans.
2. Inspection Schedules and records.
3. Personnel training documents and records.
4. Contingency Plan.
5. Closure Plan.
6. Cost estimates for facility closure and copies of related financial assurance documents.
7. Operating record.
8. Site Security Plan.
9. Facility engineering plans and specifications.
10. Recordkeeping procedures.
11. Environmental Monitoring Plans, including Sampling and Analysis Plans and QA/QC Plans.
12. Environmental monitoring data and statistical records.
13. Preventative procedures (personnel protection plan).
14. Hazardous waste minimization program certification.

{R 299.9521(3)(a)}

T. ENGINEERING PLANS

The licensee shall construct, operate, and maintain the facility in accordance with the plans and specifications included in Attachments 7 and 9 of this license. Any modifications to those plans shall be made in accordance with this license.

PART III

CONTAINER STORAGE CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste container storage areas at the facility shown in drawings entitled Site Plan and Facility Drawing are covered by this license. Any expansion or enlargement beyond the facility boundary shown on the previously referenced drawings or beyond the 264,300 gallon storage design capacity requires a construction permit from the Director. Drawings entitled Surveyed Property Description and Facility Drawing, and Drawings C2, C5, C6, S19, S20, S23, M26, C8, C9, C10, C11, S3, PP10, A10, and A11 are incorporated herein as part of Attachment 7. {R 299.9521(1)(b)}

B. WASTE IDENTIFICATION AND QUANTITY

1. The licensee may store no more than a total volume of 264,300 gallons of the hazardous wastes listed in the Acceptable Waste Types, Attachment 8, of this license in containers at the facility, subject to the terms of this license. For the purposes of converting gallons to pounds, the conversion factor shall be 8.34 pounds equal one gallon of water. {R 299.9521(2)(d)}

2. A maximum of 82,500 gallons or 1500, 55-gallon container equivalents may be stored in the North Container Storage Area subject to the terms of this license. {R 299.9521(3)(b)}

3. A maximum of 33,000 gallons or 600, 55-gallon container equivalents may be stored in the East Container Storage Area subject to the terms of this license. {R 299.9521(3)(b)}

4. The licensee may temporarily store a maximum of 11,000 gallons or 200, 55-gallon container equivalents of untreated waste or 500 cubic yards of treated waste in the West Treatment Bay and East Treatment Bays, subject to the terms of this license. Containers of untreated waste may be stored in this area for no more than one eight-hour shift. {R 299.9521(3)(b)}

5. At no time shall the total number of containers in storage in the North Container Storage Area, the East Container Storage Area, and within the bays of the treatment building exceed a maximum of 82,500 gallons or 1500, 55-gallon container equivalents. {R 299.9521(3)(b)}

6. A maximum of 181,800 gallons or 900 cubic yards of hazardous waste in containers may be stored in the Southeast Container Storage Area subject to the terms of this license. {R 299.9521(3)(b)}

7. The licensee may construct a concrete hazardous waste container storage pad to store a maximum of 181,800 gallons in the Southeast Container Storage Area without a construction permit from the Director provided that the following conditions are complied with:

   (a) Construction of the concrete hazardous waste container storage pad shall be completed within three years from the effective date of this license. {R 299.9516(1)}

   (b) The licensee shall obtain the WHMD Chief written approval of the engineering design plans and specifications for the concrete hazardous waste container storage pad prior to construction.

(c) Construction of the concrete hazardous waste container storage pad shall occur within the licensed boundaries of the Southeast Container Storage Area.

(d) Within 30 days of construction completion, the licensee shall submit via certified mail or hand delivery a construction certification report to the WHMD Chief. The construction certification report shall include the following:

(i) As-built drawings of the constructed concrete hazardous waste container storage pad.

(ii) A letter signed by the licensee and a registered professional engineer attesting that:

(1) The facility has been constructed in compliance with this license and approved plans.

(2) The WHMD has inspected the constructed concrete hazardous waste container storage pad and finds it is in compliance with the conditions of this license.

(e) The licensee shall institute a MDEQ approved detection monitoring program for the shallow sand unit as required by Condition V.A.10 of this license prior to operation of the concrete hazardous waste container storage pad.

{R 299.9521(1)(b)(ii)}

C. WASTE TREATMENT METHODS

The licensee may treat hazardous debris contaminated with the hazardous waste codes listed in the Acceptable Waste Types, Attachment 8, of this license in macroencapsulation units at the facility, subject to the terms of this license. Placement of hazardous debris directly into a macroencapsulation unit shall occur only inside the treatment building under the confines of the air pollution control equipment. {R 299.9521(2)(d), R 299.9627, and 40 CFR §268.45, which is ABR in R 299.11003}

D. WASTE BULKING OR CONSOLIDATION

1. The licensee shall only bulk or consolidate containers of hazardous waste in the North Container Storage Area in accordance with the procedures described in the Waste Analysis Plan, Attachment 1, of this license. {R 299.9605(1), and 40 CFR §264.13}

2. The licensee shall operate the air ventilation system in the North Container Storage Area during waste bulking or consolidating activities. The air ventilation system must be operating in accordance with the July 19, 2002, as-built engineering design and specifications. The EcoSorb system, installed in the air ventilation system to absorb odors from the air prior to discharge to the atmosphere, must be operating during the bulking or consolidating activities. A standard operating procedure (SOP) shall be established for the operation of the EcoSorb system. The SOP shall be submitted to the WHMD Chief within 90 days of the effective date of this license.

E. USE AND MANAGEMENT OF CONTAINERS

1. The licensee shall manage all containers in compliance with R 299.9521(3)(b), R 299.9614, R 299.9627, and 40 CFR §§264.171, 264.172, 264.173, and 268.50(a)(2)(i).

2. The licensee shall stack 55-gallon drums no greater than two high, or other containers no higher than 72 inches, in the hazardous waste container storage areas referenced in Condition III.A. of this license. {R 299.9521(3)(b)}

3. The licensee shall operate and maintain the containment system in accordance with the requirements of R 299.9614 and 40 CFR §264.175, and the plans and specifications included in Attachment 7 of this license.

4. The licensee shall not store containers holding liquid hazardous waste in the Southeast Container Storage Area, unless all requirements of Condition III.B.7. are met. {R 299.9614 and 40 CFR §264.175}

5. The license may store containers of treated hazardous waste in the North Container Storage Area, provided the following conditions are complied with:

   (a) Containers of treated hazardous waste must be covered during storage.

   (b) No manipulation, except for sampling, of the treated waste is allowed during storage.

   (c) Containers of treated hazardous waste must be evaluated according to the November 3, 1999, approved SOP – Odor Evaluation and Appropriate Response prior to storage in the North Container Storage Area. The results of this evaluation must be maintained in the operating record. {R 299.9521(3)(b) and 40 CFR §264.73(b)(3)}

   (d) The air ventilation system in the North Container Storage Area must be operating in accordance with the July 19, 2002, as-built engineering design and specifications. The EcoSorb system, installed in the air ventilation system to absorb odors from the air prior to discharge to the atmosphere, must be operating while treated hazardous waste is in storage in the North Container Storage Area. An SOP shall be established for the operation of the EcoSorb system. The SOP shall be submitted to the WHMD Chief within 90 days of the effective date of this license.

6. The licensee may store containers of decharacterized waste that meet land disposal restrictions standards in the container storage areas identified in Condition III.B., subject to the terms of this license.

F. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES

1. The licensee shall locate containers holding ignitable or reactive wastes in accordance with R 299.9614 and 40 CFR §264.176.

2. The licensee shall take precautions to prevent the accidental ignition or reaction of ignitable or reactive wastes by following the procedures specified in the Waste Analysis Plan, Attachment 1, of this license. The licensee shall document compliance with this condition and place this documentation in the operating record. {R 299.9605 and 40 CFR §264.17(a) and (c)}

3. Containers holding ignitable or reactive hazardous waste shall be stored only in the North or East Container Storage Areas while awaiting transshipment off site.

G. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

1. The licensee is prohibited from placing incompatible wastes or incompatible wastes and materials in the same container. {R 299.9521(2)(d) and (3)(b)}

2. The licensee shall prevent the placement of hazardous waste in an unwashed container that previously held an incompatible waste or material. {R 299.9614 and 40 CFR §264.177(b)}

3. The licensee shall document compliance with Conditions III.G.1. and III.G.2. of this license and place this documentation in the operating record. {R 299.9605 and 40 CFR §264.17(c)}

4. The licensee shall separate containers of incompatible wastes as indicated in the procedures contained in the Waste Analysis Plan, Attachment 1, of this license. {R 299.9614 and 40 CFR §264.177(c)}

H. DISPOSITION OF ACCUMULATED LIQUIDS AND SOLIDS

The licensee shall remove liquids and pumpable solids from the containment system within 24 hours of detection. Nonpumpable solids shall be removed every 60 days. For high precipitation conditions, where removal cannot be completed within 24 hours, removal of the spilled or leaked waste and accumulated precipitation must begin within 24 hours of detection and continue until that removal is complete. Removed spilled and leaked waste and accumulated precipitation shall be managed in accordance with the requirements of Part 111 of Act 451 and the rules, as specified in Attachment 7 of this license. {R 299.9521(3)(b), R 299.9614(1)(a) and 40 CFR §264.175(b)(5).

I. COMPLIANCE WITH AIR EMISSION AND WASTE MANAGEMENT REQUIREMENTS FOR STORAGE IN CONTAINERS

The licensee shall operate the facility in a manner that will prevent air emissions in violation of Part 55 of Act 451. {R 299.9602(1)(b)}

PART IV

TANK SYSTEM STORAGE AND TREATMENT CONDITIONS

A. COVERAGE OF LICENSE

The hazardous waste tank system storage and treatment areas at the facility shown on the Facility Drawing are covered by this license. Any expansion or enlargement beyond the facility boundary shown on the Facility Drawing or beyond the 649,880-gallon tank system storage design capacity or beyond the 576,000-gallon per day treatment design capacity requires a construction permit from the Director. The Facility Drawing and Drawings S1, S5, S6, S9, S10, PP2, PP3, PP4, PP7, PP8, PP10, PP11, PP16, PP19, M3, M5, M7, and M8 are incorporated herein as Attachment 9 of this license. {R 299.9521(1)(b)}

B. WASTE IDENTIFICATION AND QUANTITY

1. The licensee may store no more than a total volume of 649,880 gallons of the hazardous wastes listed in the Acceptable Waste Types, Attachment 8, of this license in the tank systems identified as Tanks 2, 3, 6, A, B, C, D, E, F, G, H, 16, 17, 18, 19, 25, and 27 at the facility, subject to the terms of this license. For the purposes of converting gallons to pounds, the conversion factor shall be 8.34 pounds equal one gallon of water. {R 299.9521(2)(d) and (3)(a) and (b)}

2. The licensee may store a maximum of 60,000 gallons of dry hazardous waste dust in the three hazardous waste lime storage silos designated as Tanks 2, 3, and 6. {R 299.9521(2)(d) and (3)(a) and (b)}

3. The licensee may store a maximum of 389,880 gallons of hazardous wastes in the eight waste treatment tanks designated as Tanks A, B, C, D, E, F, G, and H. {R 299.9521(2)(d) and (3)(a) and (b)}

4. The licensee may store a maximum of 80,000 gallons of hazardous wastes awaiting treatment in the four waste/reagent storage tanks designated as Tanks 16, 17, 18, and 19. {R 299.9521(2)(d) and (3)(a) and (b)}

5. The licensee may store a maximum of 40,000 gallons of hazardous waste or waste regent in the waste/reagent storage tanks designated as Tanks 25 and 27. {R 299.9521(2)(d) and (3)(a) and (b)}

6. Two, 40,000 gallon sludge receiving tanks designated as Tanks 11 and 12 were certified closed on October 25, 2004. The 80,000 gallon storage capacity from these tanks is hereby transferred to the tank farm located in the northeast corner of the East Container Storage Area. The licensee may install new hazardous waste tanks to store a maximum of 80,000 gallons without a construction permit from the Director provided that the following conditions are complied with:

   (a) Installation of the new hazardous waste storage tanks shall be completed within three years from the effective date of this license. {R 299.9516(1)}

(b) The licensee shall obtain the WHMD Chief written approval of the engineering design plans and specifications for the new hazardous waste storage tanks prior to installation.

(c) Installation of the new hazardous waste storage tanks shall occur within the licensed boundaries of the tank farm located in the northeast corner of the East Container Storage Area.

(d) Within 30 days of installation completion, the licensee shall submit via certified mail or hand delivery an installation certification report to the WHMD Chief. The installation certification report shall include the following:

(i) As-built drawings of the installed hazardous waste storage tanks.

(ii) Written tank assessments as required by the provisions of R 299.9615(1) and 40 CFR §264.192.

(iii) A letter signed by the licensee and a registered professional engineer attesting that:

(1) The facility has been constructed in compliance with this license and approved plans.

(2) The WHMD has inspected the installation of the hazardous waste tanks and finds it is in compliance with the conditions of this license.

{R 299.9521(1)(b)(ii)}

C. WASTE TREATMENT CAPACITY AND METHODS

1. The licensee may treat no more than a total volume of 576,000 gallons per day of the hazardous wastes listed in the Acceptable Waste Types, Attachment 8, of this license in the tank systems identified as Tanks A, B, C, D, E, F, G, H, 14, and 15 at the facility, subject to the terms of this license. {R 299.9521(2)(d) and (3)(a) and (b)}

2. The licensee shall treat hazardous wastes listed in Attachment 8 of this license through chemical stabilization. For wastes that require more than one type of treatment, the licensee shall use neutralization, deactivation, chemical oxidation, and/or chemical reduction treatment technologies. Waste treatment shall be conducted in accordance with the methods and procedures specified in Attachments 1 and 10 of this license, subject to the terms of this license. {R 299.9633}

3. The licensee may treat hazardous debris contaminated with waste codes listed in Attachment 8 of this license by using the microencapsulation and macroencapsulation immobilization technologies specified in 40 CFR §268.45 and the procedures specified in the Waste Analysis Plan, Attachment 1, of this license, subject to the terms of this license. {R 299.9521(2)(d), R 299.9627 and 40 CFR Part 268, which is ABR in R 299.11003}

4. The licensee may operate the treatment system 24 hours per day, seven days per week. {R 299.9521(3)(b)}

5. The licensee shall operate the air pollution control equipment when waste is stored or treated and maintain negative static pressure in the waste treatment building (i.e., pugmill mixer rooms, waste treatment/storage tanks) at all times that waste is stored in the treatment building, excluding air pollution control device malfunctions and routine maintenance as allowed under Part 55 of Act 451and its rules. Waste treatment shall cease during air pollution control device malfunctions and routine maintenance. The licensee shall not have more than one overhead door open at any time on the east side or the west side of the waste treatment process building. {R 299.9602(1)(b) and R 299.9521(3)(b)}

6. The licensee shall cover hazardous and nonhazardous treated waste loads in the treatment building prior to the load being transported from the treatment building. {R 299.9521(3)(b)}

7. The licensee shall not mix waste during treatment in such a manner that the fire suppression system is damaged or made ineffective. {R 299.9521(3)(b)}

8. Treatment of hazardous waste shall be completed within the confines of the treatment building. Except as specified in this condition, emissions from the treatment of hazardous waste must be controlled with a permitted air pollution control system. {R 299.9602(1)(b) and R 299.9521(3)(b)}

9. Treated hazardous and decharacterized waste shall be directly transferred from the treatment building and stored in the licensed storage areas in accordance with Conditions III.E.5. and III.E.6 of this license. {R 299.9602(1)(b) and R 299.9521(3)(b)}

D. DESIGN, CONTAINMENT AND ASSESSMENT OF TANK SYSTEMS

The licensee shall operate and maintain all tank systems in accordance with the applicable requirements of R 299.9615 and 40 CFR §§264.191, 264.193, and 264.194, and in accordance with the attached plans and specifications in Attachment 9 of this license.

E. MANAGEMENT OF TANK SYSTEMS

1. The licensee shall label and manage the tank systems in accordance with the requirements of R 299.9615, R 299.9627, 40 CFR §§264.194, 264.196, and 268.50(a)(2)(ii), R 29.4101 to R 29.4504 pursuant to the provisions of the Fire Prevention Act, 1941 PA 207, as amended, National Fire Protection Association (NFPA) Standard No. 704, and the spill and overfill prevention procedures specified in Attachment 9 of this license. {R 299.9615}

2. The licensee shall conduct the treatment of hazardous wastes in accordance with the methods and procedures specified in Attachments 1 and 10 of this license. {R 299.9633}

F. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTES OR MATERIALS

1. The licensee shall not store ignitable waste in a tank system, unless the procedures described in the Waste Analysis Plan, Attachment 1, of this license are followed. The licensee shall document compliance with this condition and place this documentation in the operating record. {R 299.9605, R 299.9609, R 299.9615 and 40 CFR §§264.17(c), 264.73(b)(3), and 264.198(a)}

2. The licensee shall maintain the protective distances between the tank systems and any public ways, streets, alleys, or adjoining property lines that can be built upon, as required in Tables 2-1 through 2-6 of the NFPA's "Flammable and Combustible Liquids Code" (1977 or 1981) as specified in Attachment 9 of this license, and as required by R 299.9615 and 40 CFR §264.198(b).]

3. The licensee shall not treat ignitable wastes or materials having a flashpoint less than 90°F in tank systems at the facility. {R 299.9521(2)(d) and (3)(d)}

4. The licensee shall not store or treat D003 reactive wastes or materials in tank systems at the facility. The licensee may store or treat deactivated reactive wastes or materials that do not exhibit the characteristic of reactivity as defined in R 299.9212. {R 299.9521(2)(d) and (3)(b)}

G. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTES OR MATERIALS

The licensee shall not place incompatible wastes or incompatible wastes and materials, in the same tank system or place hazardous waste in a tank system that has not been decontaminated and that previously held an incompatible waste or material. The licensee shall document compliance with this condition in the operating record. {R 299.9609, R 299.9615 and 40 CFR §§264.17(c), 264.73(b)(3), and 264.199}

H. DISPOSITION OF ACCUMULATED LIQUIDS AND SOLIDS

The licensee shall remove liquids and pumpable solids from the containment system within 24 hours of detection. Nonpumpable solids shall be removed every 60 days. For high precipitation conditions, where removal cannot be completed within 24 hours, removal of the spilled or leaked waste and accumulated precipitation must begin within 24 hours of detection and continue until that removal is complete. Removed spilled and leaked waste and accumulated precipitation shall be managed in accordance with the requirements of Part 111 of Act 451 and its rules, as specified in Attachment 7 of this license. {R 299.9521(3)(b), R 299.9614(1)(a) and 40 CFR §264.175(b)(5).

I. COMPLIANCE WITH AIR EMISSION AND WASTE MANAGEMENT REQUIREMENTS FOR STORAGE AND TREATMENT IN TANK SYSTEMS

The licensee shall operate the facility in a manner that will prevent air emissions in violation of Part 55 of Act 451. {R 299.9602(1)(b)}

PART V

ENVIRONMENTAL MONITORING CONDITIONS

A. GROUNDWATER MONITORING PROGRAM

1. The licensee shall conduct a detection monitoring program for primary and secondary parameters. Under this program, the licensee shall operate and maintain a groundwater monitoring system in accordance with the Groundwater Monitoring Program, Sampling and Analysis Plan (SAP), Attachment 11, of this license. {R 299.9611(2)(a) and (b), R 299.9612, R 299.9629, and 40 CFR Part 264, Subpart F, excluding 40 CFR §§264.94(a)(2) and (3), 264.94(b) and (c), 264.100, and 264.101}

2. Water removed from each monitoring well shall be managed as specified in Section V of the Groundwater Monitoring Program, Sampling and Analysis Plan (SAP), Attachment 11, of this license. {R 299.9521(3)(b)}

3. The licensee shall submit an annual groundwater report to the WHMD Chief no later than March 1 for the activities of the previous calendar year. At a minimum, the report shall include the following information:

   (a) A narrative summary of the sampling events for the previous calendar year, including sampling event dates, the identification of any significant problems with respect to SAP procedures, and copies of field log sheets.

   (b) A determination of the groundwater flow rate and direction in the monitored zones (shallow sand zone, drift aquifer, and bedrock aquifer), including the preparation of a groundwater level contour map from this data.

   (c) A summary of groundwater quality data results, including narrative, tabular, and graphical summaries of results and trends.

   (d) A presentation of the statistical analysis of the data and the identification of any statistically significant increases (and/or pH decreases) pursuant to Condition V.A.5 of this license.

   (e) An analysis and discussion of laboratory and field related QA/QC information. This shall include results of equipment, field, and trip blanks, and a discussion and evaluation of the adequacy of the data with respect to SAP specifications and requirements.

{R 299.9521(3)(b), R 299.9612(1) and 40 CFR §264.97(j)}

4. The licensee shall establish background groundwater quality values at monitoring wells as specified in Section 3.0 of the Statistical Monitoring Plan for Groundwater Monitoring Data, Attachment L, of Attachment 11 of this license. {R 299.9612(1)(c), (d), and (e) and 40 CFR §264.97(a) and (g)}

5. Within 60 days after each sampling of each monitoring well, the licensee shall determine if a statistically significant increase (or change in pH) has occurred compared to background levels for each primary and secondary parameter listed in Table 3 in Attachment H of the Groundwater Monitoring Program, SAP, Attachment 11, of this license. For the primary

parameters, any occurrence above the laboratory detection limit(s) for the parameters shall be considered statistically significant. {R 299.9612(1)(c) and (e) and 40 CFR §264.97(h) and (i)}

6. If a statistically significant increase (or change in pH) is detected for any primary or secondary parameter, the licensee shall notify the WHMD, Hazardous Waste Section, Hazardous Waste Technical Support Unit, by telephone within one working day and arrange a resampling as soon as possible to confirm if a statistically significant increase (or change in pH) exists. Resampling must include not less than four replicate samples at the affected well(s) for the parameter(s) in question. For the primary and any other nonnaturally occurring parameters, a statistically significant increase shall be confirmed if at least two of the four resample results are detected above the laboratory detection limit(s) for the parameter(s), or if at least one of the resample results is detected at five times the laboratory detection limit. For the naturally occurring secondary parameters, a statistically significant increase shall be confirmed using the average concentration of the four replicate confirmation samples as the analytical result in the statistical procedures specified in Attachment L of Attachment 11 of this license. {R 299.9612 and 40 CFR §264.97(g)}

7. If the licensee determines pursuant to Conditions V.A.5. and V.A.6. of this license that a statistically significant increase has been confirmed for any primary parameter, the licensee shall address the increase in accordance with the requirements specified in R 299.9612 and 40 CFR §264.98(f) and (g). Additionally, the licensee shall:

   (a) Within one working day, notify the WHMD Chief or the appropriate WHMD Supervisor, or if unavailable, the MDEQ, PEAS at 1-800-292-4706.

   (b) Immediately take steps to determine the cause of the contamination and eliminate the source of discharge.

   (c) Within 180 days after the determination, submit to the WHMD Chief a detailed description of corrective actions that shall achieve compliance with applicable laws and rules, including a schedule of implementation. Corrective action shall also meet the requirements of R 299.9629 and include a plan for a groundwater monitoring program that shall demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program developed to meet the requirements of 40 CFR §264.99.

   (d) Prior to a license modification requiring a compliance monitoring and corrective action program, the licensee shall provide the WHMD Chief, or his or her designee, with weekly telephone updates and written reports every two weeks regarding the progress to date in determining the cause of contamination and eliminating the discharge. The written report shall include the results of all samples from environmental monitoring conducted by the licensee. {R 299.9521(3)(b)}

8. If the licensee determines pursuant to Conditions V.A.5. and V.A.6. of this license that a statistically significant increase (or change in pH) has occurred for any secondary parameter, the licensee shall address the increase (or change in pH) in accordance with the requirements specified in R 299.9612. Additionally, the licensee shall:

(a) If confirmed, immediately take steps to determine the cause of contamination and eliminate the source of the discharge. A report that explains the chronology of events, investigative methods, all laboratory analyses, calculations, field activities, and findings, related to this determination shall be submitted within 60 days after a statistically significant determination under Condition V.A.5. and V.A.6. of this license.

(b) Demonstrate that a source other than the licensed facility, or an error in sampling, analysis, or evaluation solely caused the increase. A report that contains the information in Condition V.A.8.(a) of this license shall be submitted within 60 days after a statistically significant determination under Condition V.A.5. and V.A.6. of this license.

9. In the event that the WHMD Chief determines from the findings of Conditions V.A.5. and V.A.6. of this license that a statistically significant increase (or change in pH) in hazardous constituents has occurred in the groundwater, and the Director finds in accordance with Section 11148 of Act 451 that the increase (or change in pH) may present an imminent and substantial hazard to the health of persons or to the natural resources, or is endangering or causing damage to public health or the environment, the licensee shall immediately comply with an order issued by the Director pursuant to Section 11148(1) of Act 451 to cease waste receipt, storage, and treatment at the affected units and conduct other activities as required by the Director to eliminate the said endangerment. {R 299.9612(1)(g)}

10. The licensee shall conduct a quarterly hydraulic monitoring program for the shallow sand unit as specified in the Groundwater Monitory Program, SAP, Attachment 11, of this license. A detection monitoring program must be initiated prior to operation of the proposed concrete hazardous waste storage pad pursuant to Condition III.B.7. of this license, or if the MDEQ determines that groundwater in the shallow sand unit is not flowing to the east and discharging to the South Sedimentation Basin.

11. The licensee shall report all groundwater detection monitoring and hydraulic monitoring results as required by Condition II.I.3 of this license.

B. AMBIENT AIR MONITORING PROGRAM

1. The licensee shall conduct ambient air monitoring in accordance with the program specified in the Ambient Air Monitoring Program, Attachment 12, of this license. {R 299.9611(2)(c)}

2. The licensee shall report ambient air monitoring results as required by Condition II.I.3 of this license.

PART VI

CORRECTIVE ACTION CONDITIONS

A. CORRECTIVE ACTION AT THE FACILITY

1. The licensee shall implement corrective action for all releases of a contaminant from any waste management units (WMUs) at the facility, regardless of when the contaminant may have been placed in or released from the WMU. For the purposes of this license, the term "corrective action" means an action determined by the WHMD Chief to be necessary to protect the public health, safety, welfare, or the environment, and includes, but is not limited to, investigation, evaluation, cleanup, removal, remediation, monitoring, containment, isolation, treatment, storage, management, temporary relocation of people, and provision of alternative water supplies, or any corrective action allowed under Title II of the federal Solid Waste Disposal Act, or regulations promulgated pursuant to that act. For the purposes of this license, the remedial process associated with the environmental protection standards of Part 201, Environmental Remediation, of Act 451 or a substantially equivalent process approved by the WHMD Chief shall be used to satisfy the corrective action obligations under this license. {Sections 11102, 11115a, 20120a, and 20120b of Act 451 and R 299.9629(1)(a)}

2. To the extent that a release of a hazardous substance, as defined in Section 20101(t) of Act 451, that is not also a contaminant, as defined in Section 11102(2) of Act 451, is discovered while performing corrective action under this license, the licensee shall take concurrent actions as necessary to address the Part 201 of Act 451 remedial obligations for that release. {R 299.9521(3)(b)}

B. CORRECTIVE ACTION BEYOND THE FACILITY BOUNDARY

The licensee shall implement corrective action beyond the facility in accordance with Section 11115a of Act 451 and R 299.9629(2).

C. IDENTIFICATION OF WASTE MANAGEMENT UNITS

The WMUs at the facility are identified below and shown on the Facility Drawing and the Michigan Disposal, Inc. Facility Boundaries Layout and Drainage figures in the Corrective Action Program, Attachment 13, of this license.

WMU 1	The Former Michigan Disposal Waste Processing Facility
WMU 2`	Lagoon A and Stormwater Retention Basin
WMU 3	Lagoon B
WMU 4	Lagoon C
WMU 5	The Existing MDWTP *(which includes four container storage units, nine storage tanks, and eight treatment tanks)*
WMU 6	Southeast Container Storage Area
WMU 7	Truck Dock

1. The following WMUs, identified in the September 30, 1999, *MDEQ Hazardous Waste Management Facility Operating License* and in the April 30, 2004, *Michigan Disposal Waste Treatment Plant Part 111 Hazardous Waste Operating License Renewal Application*, require no further corrective action at this time because the units are currently operating pursuant to the act and its rules with no evidence of a release of any contaminants. Corrective action may be required when the units undergo final closure.

   a. WMU 5 — The existing MDWTP *(which includes four container storage units, nine storage tanks, and eight treatment tanks)*

   b. WMU 6 — Southeast Container Storage Area

   c. WMU 7 — Truck Dock

2. The following WMU, identified in the *Closure Certification Former Processing Plant Report* dated March 19, 1991, but formally submitted to the MDEQ on April 3, 1991, and in the *Overview of Operation, Closure, and Environmental Monitoring Former Michigan Disposal, Inc. Waste Processing Facility Report* dated January 7, 1992, requires no further corrective action at this time. The determination that no further corrective action is required at this time is based on the MDEQ's review of the March 19, 1991 and January 7, 1992 Reports which indicates releases from the units have been adequately addressed. The MDEQ accepted the closure certification for the former Michigan Disposal Processing Facility on September 2, 1999.

   a. WMU 1 — The former Michigan Disposal Processing Facility

   b. WMU 2 — Lagoon A and Stormwater Retention Basin

   c. WMU 4 — Lagoon C

3. The following WMU, identified in the *Overview of Operation, Closure, and Environmental Monitoring Former Michigan Disposal, Inc. Waste Processing Facility Report* dated January 7, 1992, requires no further corrective action at this time. This unit was reported to have been closed in accordance with Subpart K standards. However, no evidence of verification sampling was provided in the January 7, 1992, Report. Without this information, a final determination on the status of the unit can not be made at this time. Corrective action may be required for WMU 3 when WMU 5 undergoes final closure. This approach is necessary since WMU 3 is located beneath WMU 5 and any further investigations of WMU 3 at this time would be disruptive to facility operations.

   WMU 3 — Lagoon B

4. Within 30 days after discovery of a new release of a contaminant from a WMU, the licensee shall provide written notification to the WHMD Chief. The written notification shall include all available information pertaining to the release. Based on a review of all of the information, the WHMD Chief may require corrective action for the newly identified release. The licensee shall submit a written RI Work Plan to the WHMD Chief within 60 days after written notification by the WHMD Chief that corrective action for the release is required.

{Sections 11102 and 11115a of Act 451, R 299.9521(3)(b), and R 299.9629}

5. Within 30 days after discovery of a new WMU or a release of a contaminant from a new WMU, the licensee shall provide written notification to the WHMD Chief. The written notification shall include all of the following information:

   (a) The location of the WMU on the facility topographic map.

   (b) The designation of the type of WMU.

   (c) The general dimensions and structural description, including any available drawings of the WMU.

   (d) The date the WMU was operated.

   (e) Specification of all waste(s) that have been managed in the WMU.

   (f) All available information pertaining to any release of a contaminant from the WMU.

6. Based on a review of all of the information provided in Condition VI.C.5. of this license, the WHMD Chief may require corrective action for the newly identified WMU. The licensee shall submit a written RI Work Plan to the WHMD Chief within 60 days after written notification by the WHMD Chief that corrective action for the unit is required.

{Sections 11102 and 11115a of Act 451, R 299.9504(1), R 299.9508(1)(b), R 299.9629, and 40 CFR §270.14(d)}

D. **REMEDIAL INVESTIGATION**

The licensee shall conduct an investigation that conforms with, or that is substantially equivalent to, the RI in accordance with the provisions of Part 201 of Act 451 to determine if a release of a contaminant(s) from any of the WMUs identified in Condition VI.C. of this license has occurred, and if a release(s) has occurred, evaluate the nature and extent of the release(s). The licensee shall submit a written RI Work Plan, RI Final Report, documenting compliance with the approved RI Work Plan and supporting further corrective action at the facility, and RI progress reports to the WHMD Chief for review and approval in accordance with Condition VI.K. of this license. The WHMD Chief will approve, modify and approve, or provide a Notice of Deficiency (NOD) for the RI Work Plan and RI Final Report. Upon approval, the RI Work Plan and RI Final Report become enforceable conditions of this license. {Sections 11102 and 11115a of Act 451, R 299.9629, and Part 201 of Act 451}

E. **INTERIM RESPONSE ACTIVITIES**

The licensee shall conduct interim response activities (IRAs) at the facility, if determined necessary by the licensee or the WHMD Chief, to cleanup or remove a released contaminant or to take other actions, prior to the implementation of remedial action, as may be necessary to prevent, minimize, or mitigate injury to the public health, safety, or welfare, or to the environment. The licensee shall conduct IRAs that conform with, or that are substantially equivalent to, the IRA provisions of Part 201 of Act 451. The licensee shall submit written a IRA Work Plan, IRA Final Report, documenting compliance with the approved IRA Work Plan and supporting further corrective action at the facility, and IRA progress reports to the WHMD Chief for review and approval in accordance with Condition VI.K. of this license. The WHMD Chief will approve, modify and approve, or provide a NOD for the IRA Work Plan and IRA Final Report. Upon approval, the IRA Work Plan and IRA Final Report become enforceable conditions of this license. {Sections 11102 and 11115a of Act 451, R 299.9629, and Part 201 of Act 451}

F. DETERMINATION OF NO FURTHER ACTION

1. The licensee shall continue response activities to the extent necessary to ensure that the applicable environmental protection standards established under Part 201 of Act 451, as adopted in Part 111 of Act 451, are met, if the limits are not less stringent than allowed pursuant to the provisions of RCRA.

2. Based on the results of the RI and other relevant information, the licensee shall submit a written request for a minor license modification to the WHMD Chief if the licensee wishes to terminate corrective action for a specific WMU identified in Condition VI.C. of this license. The licensee must demonstrate that there have been no releases of a contaminant(s) from the WMU and that the WMU does not pose a threat to public health, safety, welfare, or the environment.

3. Based on the results of the RI and other relevant information, the licensee shall submit a written request for a major license modification to the WHMD Chief if the licensee wishes to terminate facility-wide corrective action. The licensee must conclusively demonstrate that there have been no releases of a contaminant(s) from any of the WMUs at the facility and that none of the WMUs pose a threat to public health, safety, welfare, or the environment.

4. If, based upon a review of the licensee's request for a license modification pursuant to Condition VI.F.2. or VI.F.3. of this license, the results of the completed RI, and other relevant information, the WHMD Chief determines that the releases or suspected releases of a contaminant(s) do not exist and that the WMU(s) do not pose a threat to public health, safety, welfare, or the environment, the WHMD Chief will approve the requested modification.

5. A determination of no further action shall not preclude the WHMD Chief from requiring continued or periodic monitoring of air, soil, groundwater, or surface water, if necessary to protect public health, safety, welfare, or the environment, when facility-specific circumstances indicate that potential or actual releases of a contaminant(s) may occur.

6. A determination of no further action shall not preclude the WHMD Chief from requiring further corrective action at a later date, if new information or subsequent analysis indicates that a release or potential release of a contaminant(s) from a WMU at the facility may pose a threat to public health, safety, welfare, or the environment. The WHMD Chief will initiate the necessary license modifications if further corrective action is required at a later date.

{Sections 11102, 11115a and 20120a of Act 451 and R 299.9629(2)}

G. FEASIBILITY STUDY

If the WHMD Chief determines, based on the results of the RI and other relevant information, that response activities are necessary, the WHMD Chief will notify the licensee in writing that a Feasibility Study (FS) is required. If required by the WHMD Chief, the licensee shall conduct an FS to develop and evaluate the response activity alternative(s) necessary to address the release(s) of a contaminant(s) or hazardous substances and the WMU(s) that are identified in the approved RI Final Report as requiring final response activities. The licensee shall conduct a FS that conforms with, or that is substantially equivalent to, the FS provisions of Part 201 of Act 451. The licensee shall submit a written FS Work Plan, FS Final Report, documenting compliance with the approved FS Work Plan and supporting further corrective action at the facility, and FS progress reports to the WHMD Chief for review and approval in accordance with Condition VI.K. of this license. The WHMD Chief will approve, modify and approve, or provide a NOD for the FS Work Plan and FS Final Report. Upon approval, the FS Work Plan and FS Final Report become enforceable conditions of this license. {Sections 11102 and 11115a of Act 451, R 299.9629, and Part 201 of Act 451}

H. REMEDIAL ACTION PLAN

1. The licensee shall conduct final response activities based on the FS Final Report approved by the WHMD Chief. If the final response activities are based on criteria in categories provided for in Section 20120a(1)(a) to (j) or (2) of Act 451, which are ABR in R 299.9629(3)(a)(iii), the licensee shall submit a written remedial action plan (RAP) that conforms with, or that is substantially equivalent to, the RAP provisions in Section 20120b of Act 451 to the WHMD Chief for review and approval. The licensee shall also submit a written Completion Report, documenting compliance with the completion criteria and providing justification that the remedial actions may cease, and RAP progress reports to the WHMD Chief for review and approval in accordance with Condition VI.K. of this license. The WHMD Chief will approve, modify and approve, or provide a NOD for the RAP and Completion Report. Upon approval, the RAP and Completion Report become enforceable conditions of this license.

2. The WHMD will send notice of its draft decision on the RAP to persons on the facility mailing list and provide an opportunity for a public hearing.

3. The licensee shall implement the approved RAP within 60 days after receipt of the WHMD Chief's written approval of the RAP.

{Sections 11102, 11115a, 20120a, and 20120b of Act 451 and R 299.9629}

I. CORRECTIVE ACTION MANAGEMENT UNITS

If applicable, the licensee shall comply with the requirements of R 299.9635 in order to designate an area at the facility as a corrective action management unit for implementation of response activities. {R 299.9521(3)(a)}

J. TEMPORARY UNITS

If applicable, the licensee shall comply with the requirements of R 299.9636 in order to designate tank or container storage units used for the treatment or storage of remediation wastes as temporary units for implementation of response activities. {R 299.9521(3)(a)}

K. SUMMARY OF CORRECTIVE ACTION SUBMITTALS

The licensee shall submit the required corrective action documents in accordance with Conditions VI.D., VI.E., VI.G., and VI.H of this license and the schedule below.

CORRECTIVE ACTION DOCUMENT	SUBMITTAL DEADLINE
Written notification of a new release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 30 days after discovery
RI Work Plan for a newly identified release of a contaminant from an existing WMU, a new WMU, or a release of a contaminant from a new WMU	Within 60 days after receipt of written notification that response activity is required
RI Work Plan for existing WMUs and contaminant releases	Within 60 days after the effective date of this license
Revised RI Work Plan for WMUs and contaminant releases	Within 30 days after receipt of RI Work Plan NOD
RI progress reports	Within 30 days after initiation of the RI and every 30 days thereafter
RI Final Report for WMUs and contaminant releases	Within 60 days after completion of RI
Revised RI Final Report for WMUs and contaminant releases	Within 30 days after receipt of RI Final Report NOD
IRA Work Plan for WMUs and contaminant releases	Within 60 days after receipt of notification that IRA Work Plan is required
Revised IRA Work Plan for WMUs and contaminant releases	Within 30 days after receipt of IRA Work Plan NOD
IRA progress reports	Within 30 days after initiation of the IRA and every 30 days thereafter
IRA Final Report for WMUs and contaminant releases	Within 60 days after completion of the IRA
Revised IRA Work Plan for WMUs and contaminant releases	Within 30 days after receipt of IRA Final Report NOD
FS Work Plan for WMUs and contaminant releases	Within 60 days after receipt of notification that FS is required
Revised FS Work Plan for WMUs and contaminant releases	Within 30 days after receipt of FS Work Plan NOD
FS progress reports	Within 30 days after initiation of the FS and every 30 days thereafter
FS Final Report for WMUs and contaminant releases	Within 60 days after completion of the FS

CORRECTIVE ACTION DOCUMENT	SUBMITTAL DEADLINE
Revised FS Final Report for WMUs and contaminant releases	Within 30 days after receipt of FS Final Report NOD
RAP for WMUs and contaminant releases	Within 60 days after approval of the FS Final Report
Revised RAP for WMUs and contaminant releases	Within 30 days after receipt of RAP NOD
RAP progress reports	Within 30 days after implementation of the RAP and every 30 days thereafter, unless otherwise approved
Completion Report for remediated WMUs and contaminant releases	Within 60 days after the remedial actions have been completed and cleanup criteria have been met
Revised Completion Report for WMUs and contaminant releases	Within 30 days after receipt of Completion Report NOD

L. CORRECTIVE ACTION DOCUMENTS RETENTION

The licensee shall maintain all corrective action documents required by this license at the facility. The documents shall be maintained for the operating life of the facility or until the facility is released from financial assurance requirements for corrective action by the Director, whichever is longer. The licensee shall offer such documents to the WHMD Chief prior to discarding those documents. {Sections 11102 and 11115a of Act 451, R 299.9521(3)(b) and R 299.9629}

ATTACHMENT 1

WASTE ANALYSIS PLAN

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MID 000 724 831

WASTE ANALYSIS PLAN

40 CFR 264.13b & c

AND

MI ACT 451 R504(1)c

Wayne Disposal Inc. (WDI) & Michigan Disposal Waste Treatment Plant (MDWTP)
49350-North I-94 Service Drive
Belleville, Michigan 48111

USEPA ID No. MID 048 090 633 (WDI)
USEPA ID No. MID 000 724 831 (MDWTP)

WDI/MDWTP WAP – Table of Contents

1.0 INTRODUCTION

The purpose of this Waste Analysis Plan (WAP) is to identify and document the overall operational procedures, analytical techniques, and the necessary sampling methodologies which are undertaken for hazardous wastes that are received by the **Michigan Disposal Waste Treatment Plant (MDWTP)** for treatment and/or storage as required by Part 111 of Act 451 of the Public Acts of 1994, the Natural Resources and Environmental Protection Act (NREPA), Administrative Rule 299.9504(1)(c).

Per 40 CFR 264.73, the required information will be kept as part of the operating record.

The forms referenced within this WAP are typical forms currently used by the facility. These forms will periodically require updating based upon changes in regulations, customer needs, operations, or as company policy dictates.

2.0 FACILITY DESCRIPTION

2.1 Description of General Processes

<u>Wayne Disposal, Inc. (WDI)</u>

The Wayne Disposal Site #2 Hazardous Waste Landfill operations include the landfill disposal of hazardous and non-hazardous wastes permitted by the MDEQ under the facility operating license and the USEPA under a Resource Conservation and Recovery Act (RCRA) permit (MID-048 090 633). The specific routine operations and work areas include:

- Waste receiving and Quality Control (QC);
- Waste unloading;
- Container staging; and
- Hazardous waste landfill and related appurtenances (pipings, pumps, operation and maintenance, truck wheel wash buildings located within the area bounded by North Interstate 94 (I-94) Service Drive and Willow Run Airport).

The landfill is currently permitted with a design capacity of 11,000,000 cubic yards (cy) of in-place waste.

The requirements for operations in these areas are defined in and regulated by the operating license and permit. Non-hazardous wastes are managed in accordance with Part 115. The Wayne Disposal Site #2 Hazardous Waste Landfill (MID 048 090 633) is co-located at the same site as the Michigan Disposal Waste Treatment Plant (MID-000724831). The Wayne Disposal Site #2 Hazardous Waste Landfill disposal operations are supported by the Michigan Disposal Waste Treatment Plant office/laboratory and waste receiving, storage, and treatment operations located near the entrance to the facility. These operations assist to control and evaluate shipments received for conformance with pre-approval information regarding the specific properties, treatment, and documentation requirements. The Wayne Disposal Site #2 Hazardous Waste Landfill waste analysis records are maintained at the receiving building and laboratory areas.

Michigan Disposal Waste Treatment Plant (MDWTP)

The MDWTP operations include receiving, storage, and treatment of hazardous wastes permitted by the MDEQ under the facility operating license and the USEPA under a Resource Conservation and Recovery Act (RCRA) permit (MID 000 724 831). The routine operations and work areas include:

- Waste receiving and Quality Control (QC);
- Waste loading and unloading;
- Reagent unloading and tank storage;
- Waste storage in tanks;
- Waste treatment in tanks;
- Container staging/storage; and
- Shipment of wastes off-site to treatment, storage, and disposal facilities (TSDFs).

Non-hazardous wastes are managed in accordance with the Solid Waste Processing and Transfer Facility Operating License issued under Part 115 of Act 451 of 1994, the Natural Resources and Environmental Protection Act (NREPA).

2.2 Waste Identification and Classification

The waste types acceptable for treatment and storage at the facility are defined in Appendix A of this WAP.

The facility license has specific restrictions regarding the following waste types **NOT ACCEPTABLE** for disposal:

- Ignitable wastes as described in R299.9212(1);
- Reactive wastes as described in R299.9212(3);
- Bulk or non-containerized liquid waste or waste containing free liquids;
- Containers holding free liquids, including laboratory packs;
- Wastes which will:
    a. Adversely affect the permeability of the clay liner;
    b. Produce a leachate which is incompatible with the synthetic liner, leachate collection system (LCS), discharge piping, and the off-site sewer system;
    c. Generate gases which will adversely affect the permeability of the clay cap; and
    d. Create a violation of 1975 PA 348 and rules promulgated thereunder;
- Waste which are banned from landfilling by regulations promulgated under 40 Code of Federal Regulations (CFR) Part 268 unless the wastes meet the applicable Land Disposal Restriction (LDR) treatment standards or a variance has been obtained from the USEPA.

2.3 Description of Waste Management Units

Wayne Disposal, Inc. (WDI)

The Wayne Disposal Site #2 Hazardous Waste Landfill includes a permitted hazardous waste landfill with primary and secondary liner systems, a leachate collection and removal system, and a leak detection, collection and removal system. The landfill operations also include run-on, run-off, and contaminant control systems including a vehicle wash facility and other landfill-related appurtenances and support buildings. When placed in the landfill, containers are at least 90-percent full or crushed, shredded, or similarly reduced in volume before burial in the landfill.

Michigan Disposal Waste Treatment Plant (MDWTP)

The MDWTP is a liquid and solid hazardous waste storage and treatment facility. Containerized wastes may be staged/stored on-site before and after treatment in one of the following areas:

- East Container Staging Area (ECSA)
- North Container Storage Area (NCSA)
- East and West Loading/Unloading Bays
- Southeast Container Storage Area (SECSA)

Wastes are placed directly into the waste treatment tanks, and mixed, with modifiers for deactivation, neutralization, chemical oxidation, and chemical reduction or stabilization reagents, as required for the specific wastes being treated. The facility currently uses a backhoe shear attachment to size solid containers. Prior to being sized over and into a treatment tank the containers are staged on the paved floor in front of the treatment tanks.

Liquid hazardous wastes to be treated in the pozzolanic stabilization process may be stored in four, 20,000-gallon, vertical storage tanks (16 through 19) or placed directly into treatment tanks A – H (formerly tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A and 10B respectively). Liquid reagents are stored in two, 20,000-gallon vertical tanks (25 and 27).

Dry flowable bulk solid hazardous wastes may be stored in three 100 cubic yard (CY) silos (2, 3 and 6). Lime kiln flue dust, cement kiln flue dust, lime and fly ash are also used for stabilization and may be stored in all six silos (1 through 6). The dusts are fed from the silos to the closest pugmill and treatment tank at a controlled rate to effect treatment of liquid and solid wastes. Other reagents, such as ferrous sulfate, may be added directly to the tanks in bag, container, or bulk quantities.

Hazardous waste and non-hazardous waste are stored and treated in treatment tanks A, B, C, D, E, F, G and H (formerly treatment tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A and 10B respectively) and pugmills 14 and 15. Treatment consists of blending the wastes and treatment reagents in the storage/treatment tanks.

Tanks will be decontaminated if changed from the storage/treatment of listed wastes to characteristic wastes. Decontamination consists of water washing and/or dry decontaminating the tank. The rinse waters and/or dry decontamination material is directed to a listed batch tank (containing a compatible waste). The decontamination step is noted on the Batch Ticket for the tank receiving the rinse waters and/or dry decontamination material.

Containerized hazardous waste and non-hazardous wastes are staged/stored on concrete pads at the East Container Staging Area (ECSA), North Container Storage Area (NCSA), Southeast Container Storage Area (SECSA) and inside the bays the East and West Treatment Buildings at MDWTP prior to placement in one of the tanks. Drainage trenches/sumps are constructed within the NCSA and ECSA to contain and control liquid runoff. Containers are handled by removing the tops or bungs and emptying the contents with a vacuum truck or directly into one of the treatment tanks using a forklift, or pump.

The following wastes are stored in closed containers (such as drums) and/or in tarped bulk (such as roll-off boxes or trailers):	NCSA	ECSA	SECSA (see Section 2.d.1 of the Container Storage Attachment)	East and/or West Bays Temp Storage (< 8 hrs) -
Untreated hazardous waste	Yes	Yes	Yes	Yes
Untreated solid hazardous waste bulked into roll-offs boxes or trailers (see Section 3.5)	Yes	No	No	Yes
Treated hazardous waste awaiting analytical results	Yes	No	No	Yes
Decharacterized waste awaiting analytical results	Yes	No	No	Yes
Decharacterized waste with analytical data demonstrating compliance with LDRs	Yes	Yes	Yes	Yes

3.0 OPERATIONAL PROCEDURES

3.1 Pre-Approval Procedures

3.1.1 Generator-Supplied Information

The pre-approval process is a waste evaluation procedure that takes place prior to receiving hazardous and non-hazardous wastes at the facility for storage or treatment. The initial step of the waste stream approval process is a review of the waste characterization as prepared by the generator.

WDI/MDWTP requires that the generator characterize their waste stream, in order to comply with 40 CFR Parts 261 and 268.

For the purposes of compliance with 40 CFR Part 268 or if the waste is not listed in Subpart D of 40 CFR Part 261 (R299.9213), per 40 CFR 262.11, the generators must determine whether their waste is identified in Subpart C of 40 CFR Part 261 (R299.9212) by either:

- Testing the waste according to the methods set forth in Subpart C (of 40 CFR Part 261) or according to an equivalent method approved by the Director of the MDEQ; or
- Applying knowledge of the hazard characteristic in light of the materials or processes used. Material Safety Data Sheets (MSDS) of products in combination with information provided by the generator on the GWCR are acceptable to properly characterize the waste stream.

The generator must complete a Generator Waste Characterization Report (GWCR) or equivalent form. WDI/MDWTP will accept other forms of documentation of waste characterization than the GWCR as long as all pertinent information is included. GWCRs are supplied to the generators in hard copy or online at www.eqonline.com. The elements of the GWCR include:

- Generator name, address, and telephone number;
- USEPA ID Number;
- Description of Generating Process;
- USEPA and/or Michigan Hazardous Waste Codes;
- Hazardous & Toxicity Characteristics;
- Actual &/or Potential Constituents;

- Fingerprint parameters as described in this WAP; and
- Generator's Written or Electronic Signature or a signed statement from the generator giving permission to a 3rd party to act on their behalf.

The GWCR, with the supporting analytical data where required, forms the basis of information upon which the facility determines if the waste can be accepted for disposal at WDI or storage, transshipment and treatment at MDWTP. Waste streams are also reviewed with respect to the Land Disposal Restrictions (LDR) requirements in 40 CFR Part 268. The analytical data, waste type, process description, waste chemical and physical characteristics, or a representative sample provide MDWTP/WDI with sufficient information to decide if the waste can be accepted or if additional data is required before a decision can be reached. If the generator does not provide sufficient information, the generator or their representative is contacted and requested to provide further information before the approval process will continue.

3.1.2 Special Conditions

Exceptions for the requirement of a sample of waste for acceptance at WDI or MDWTP include the following waste types:

- Articles, equipment, clothing (such as personal protective equipment (PPE)) contaminated with chemicals;
- Empty containers which once held waste, commercial chemical products, or chemicals (small tanks, containers, bags, boxes, liners, cans, pails, etc.). Containers are considered "empty" according to the criteria specified in R299.9207;
- Asbestos-containing waste from cleaning or demolition activities that is properly bagged/containerized;
- Spent activated carbon, filters from inside tanks, ion-exchange resins, molecular sieves, filters/ cartridges;
- Hazardous contaminated debris and demolition wastes (40 CFR 268);
- Chemical-containing devices/articles, such as cathode ray tubes (CRTs), fluorescent lights, batteries;

- Discarded, off-specification, or out-dated commercial products. A MSDS will be provided or made available for review;
- Wastes from food or animal processing;
- Animal feces
- Selected wastes from medical, veterinarian, taxidermy, or mortuary facilities;
- Septage or sewer treatment plant sludge from domestic users; and
- Tanks (whole or cut);
- Equipment, machinery, pumps, piping, etc.; and
- Waste streams approved by MDEQ on a case-by-case basis.

For wastes from which no samples will be taken prior to disposal, a visual inspection will be performed to determine if the waste resembles the description provided in the approval. Double contained asbestos waste will not be opened for visual inspection. However, during the pre-approval process, the generator must verify that the asbestos contains no free liquids and it is so stipulated on the GWCR for that waste stream.

3.1.3 Special Wastes

3.1.3.1 Source Material, NORM or TENORM

Waste streams containing NORM, TENORM, and exempted radioactive material may be managed at Site #2 (MDWTP and/or WDI) provided the following steps are taken:

1. During the Site #2 (MDWTP and/or WDI) pre-approval process, obtain a radiochemical analysis and/or other appropriate radiological information on each (NORM, TENORM, and exempted radioactive material) proposed waste stream as well as any other information required by this WAP including the WCR. No material classified as low-level radioactive waste pursuant to Title 42 of the United States Code, Chapter 23, Development and Control of Atomic Energy, Section 2021b, Definitions, is allowed at the site.

2. The radiochemical analysis and appropriate information are evaluated to determine if they can be accepted at the site. All material accepted at the site shall be in at least one of the following categories:

State of Michigan Regulated Materials

Note: For the purposes of interpreting the state of Michigan's *Ionizing Radiation Rules (IRR) Governing Radioactive Material,* refer to the definitions contained in IRR Rules 3 thru 20.

a. Exempt concentrations: IRR Rule 65
b. Exempt quantities: IRR Rule 74
c. Specific exemptions: IRR Rules 67(b), 72(b), 73(1)(b), and 73(2)
d. NORM: The DEQ's *Cleanup and Disposal Guidelines for Sites Contaminated with Radium-226* (EQC 1602)

U.S. Nuclear Regulatory Commission (NRC) Regulated Materials

Note: For the purposes of interpreting Title 10 of the Code of Federal Regulations (10 CFR), refer to the definitions contained in 10 CFR, Sections 20.1003, 30.4, and 40.4.

a. Exempt concentrations: 10 CFR, Sections 30.14 and 40.13
b. Exempt quantities: 10 CFR, Section 30.18
c. Specific exemptions: 10 CFR, Sections 20.2005, 30.11, 30.15, 30.16, 30.19, 30.20, 30.21, 40.14, and 40.22

Disclaimer: This in no way represents approval or authorization for receipt of NRC regulated material. If you have questions about radioactive material regulated by the NRC, contact the NRC regional office at 630-829-9500.

3. A sample is obtained from the generator, if appropriate, to determine if the level of radioactivity, based on a gamma radiation reading, will be above Site 2's background limit. The reading will be recorded for that (NORM, TENORM, and exempted radioactive material) EQ waste stream.

4. WDI and/or MDWTP may approve for receipt each (NORM, TENORM, and exempted radioactive material) proposed waste stream that meets the above criteria.

5. A (NORM, TENORM, and exempted radioactive material) waste stream may not be received by WDI and/or MDWTP until steps 1-4, above, have been followed.

Questions about radioactive material regulated by the state of Michigan should be directed to the DEQ.

3.1.3.2 Asbestos Waste Containing PCBs and/or RCRA Hazardous Waste

Asbestos containing waste that also contains PCBs and/or is also a RCRA hazardous waste is exempt from the requirement of a sample of waste for review and acceptance and visual inspection at the facility if all of the following conditions are met:

- The waste contains ≥ 1% asbestos;
- The waste is properly bagged/containerized;
- Bulk asbestos waste will be handled in such a manner as to not cause any visual emissions;
- The generator verifies that the asbestos containing waste contains no free liquids and it is so stipulated on the approval.

3.1.4 Generator Waste Characterization Report (GWCR) Review

After the generator-supplied information is received, trained personnel (which may include, but is not limited to, the Laboratory Manager, Technical Support Manager, Approvals staff and WDI/MDWTP Operations Management & Supervisors or their designee) review the information then determine if additional information or analyses are required.

"Trained personnel" refers to those persons authorized to do a task based on the ISO Job Descriptions maintained on-site. These ISO Job Descriptions are considered living documents will be updated as needed and maintained at WDI/MDWTP and can be reviewed upon request at the facility.

Representative samples of waste may be provided by the generator, may be subject to the fingerprint analysis (see Sections 4.0, 5.0 and Table 3), except where noted in Section 3.1.2. Supplemental analysis (indicated with a "O" in Table 3) may also be performed at the direction of trained personnel based upon the available information provided by the generator, USEPA, or Michigan hazardous waste numbers and MDWTP's operating requirements.

If, during the review, trained personnel determine that the waste characteristics do not conform to the information provided on the GWCR, the generator or their representative is notified in order to attempt to resolve the discrepancy. If the inconsistency is not resolved, the waste will be rejected and not approved.

3.1.5 Treatment, Storage, and Disposal Approval

When it is determined that a waste stream can be safely handled at WDI/MDWTP in accordance with the operating license requirements, it is assigned a unique approval number. An approval letter is sent to the generator, serving as notification that the waste as represented may be shipped to WDI/MDWTP, and that WDI/MDWTP has the appropriate permit(s) to accept the waste. All approval files are maintained in the facility operating record in a paper or other archival form. Approval files with no shipments before expiration will not be kept in the facility operating record.

Section 4 details the testing procedures and criteria utilized by trained personnel to evaluate waste as part of the pre-approval process. Once the generator has received the approval to ship, the generator or their representative arranges for transportation and delivery by a licensed waste transporter.

3.1.6 Waste Approval Re-Evaluation

WDI/MDWTP requires that the GWCR, supporting information, and/or documentation be updated whenever any one of the following occur:

- There has been a change in the process generating the waste;
- Inspection of a waste shipment reveals that the waste does not meet the description/classification of the current approval record for the waste; or
- One year has passed since the last approval of the waste.

3.2. Incoming Load Pre-Acceptance Procedures

The procedures for incoming wastes are designed to assure that loads received for treatment and/or storage have been previously approved for acceptance, and are representative and consistent with the information submitted with the GWCR.

3.2.1 Inbound Load Procedure

When a shipment of waste arrives at the facility, the following step-wise procedure is followed:

- The driver proceeds to the inbound scale where the weight and truck number are recorded. The driver then proceeds to the sampling station (for containerized loads, this step may be omitted);
- The driver presents the manifest and any other shipping documents to trained personnel in the Receiving Building; and
- Trained personnel examine the manifest and other shipping documents, for manifests discrepancies, completeness and to ensure that the shipment was intended for treatment and/or storage at MDWTP and/or disposal at WDI.

3.2.2 Waste Inspection and Sampling

After reviewing the documents and determining that the waste stream has been approved, trained personnel check the computer or manual records for any notes or special handling instructions for the shipment and create a Post-Inspection Form (PIF). For bulk shipments, the sampler visually examines the load, pulls a sample, and submits the sample for testing.

For container loads, the driver is given a copy of each manifest and corresponding lab worksheet, PIF and drum log. For MDWTP, the vehicle is directed to the container truck dock where the containers are removed from the vehicle and placed into the staging/storage area(s). Trained personnel visually examine the load, pull a sample, and then submit the samples for testing. All waste streams are sampled as described under "Sampling Methodologies" in Section 6.0.

3.2.3 TSDF Evaluation and Approval

Trained personnel conduct the analytical tests and required observations specified for the particular waste stream as described in Section 5.1. If the results of the pre-acceptance fingerprint testing and observations agree with the pre-approval screening data, the waste load is approved for receipt. If the results fall outside the profiled range of variability, the procedures in Section 3.3.1 – Off- Specification and Rejected Load Procedures are followed.

For bulk shipments, the designated treatment and/or storage location is stamped on the PIF, it is handed to the driver, and then the vehicle is directed to the assigned tank located at the MDWTP East or West Treatment Buildings. For container loads, the PIF is handed to the driver at the Receiving Building, then the vehicle is directed to MDWTP and the load can be accepted.

3.3 Procedure for Unloaded Trucks

After unloading, vehicles are directed through the Truck Wash. Containerized loads wait in the holding area until cleared to leave. Bulk shipments proceed to the outbound scale. The driver returns the completed PIF to the Receiving Building and the outbound weight and truck number are recorded.

The manifest is signed, dated, disassembled, and the driver is given the "Transporter" copy. Remaining copies of the manifest are placed in a holding file for later distribution according to the instruction on the manifest form. In the event an electronic manifest is used, the established electronic manifest procedures are followed.

3.3.1 Off-Specification and Rejected Load Procedures

WDI/MDWTP will follow 40 CFR 264, Subpart E in determining if a significant discrepancy exists.

Discrepancies that do not fall within these criteria are considered to be "minor" and are not subject to a re-characterization review unless WDI/MDWTP has reason to believe that the variation is a continuing deviation and that a particular waste stream is indeed different from the waste approved. Significant inconsistencies in waste type, as defined in 40 CFR 264 Subpart E, result in re-characterization if the inconsistency cannot be reconciled with the generator or WDI/MDWTP has reason to believe that the waste composition has changed.

If a significant discrepancy is revealed during the incoming load procedure, the generator or their representative is contacted to resolve the problem. If the discrepancy is reconciled, the load may be received and the details of the reconciliation are recorded. If the discrepancy is not resolved, the shipment is rejected per 40 CFR 264, Subpart E. The appropriate manifest documents are then returned to the driver.

3.4. MDWTP Storage

Stored containerized liquid and solid wastes are segregated following USDOT segregation and separation requirements (see Table 1). Liquid wastes, which are transferred from containers, portable tanks or tank trucks, may be transferred to storage tanks prior to subsequent treatment.

Prior to wastes being placed in any storage unit, facility personnel will determine the compatibility of the waste with the storage unit materials of construction and with wastes already stored therein. The evaluation is based upon vendor/engineering data, materials of construction, and knowledge of the waste and its characteristics from the GWCR. If such data are not available, compatibility testing will be performed prior to storage.

3.4.1 MDWTP Container Storage

Containerized wastes in storage are segregated according to 49 CFR Subpart C—Segregation and Separation Chart of Hazardous Materials segregation rules. (See Table 1) Based on the hazard assessment of the waste, the containerized waste is organized into segregated storage areas within the NCSA, ECSA, SECSA and the East and West Loading/Unloading Bays.

3.4.2 MDWTP Tank Storage

Wastes to be stored in tanks will undergo the fingerprint analyses, including a waste compatibility test. Additional testing will be based on the targeted treatment or disposal requirements.

Liquid wastes, delivered in bulk form by tank trucks or decanted from containers or portable tanks, are placed in bulk storage tanks or directly into treatment/storage tanks prior to treatment.

3.4.3 MDWTP Lab Compatibility Test

Prior to transferring any wastes into a storage tank, the compatibility of the waste, with the material already in the tank, will be determined by mixing in a "mock tank" a waste sample from the tank with samples of waste to be added to the tank. Following the preliminary screening and compatibility testing, specific storage and process compatibility will be determined. The current version of the

Work Plan for the Lab Compatibility Test is at the end of this WAP. The parameters used to determine compatibility are briefly outlined below

- Gas Evolution - Materials that upon mixing, appear to liberate significant amounts of vapors, fumes, or mists, will not be combined.
- Heat Generation - Materials that, upon mixing, would generate excessive amounts of heat will not be combined.
- Adverse Reactions - Materials that, upon mixing, result in the formation of a large amount of sludge, or solidify or gel may not be combined if this causes a removal or subsequent handling problem.

When a bulk shipment is to be unloaded into a tank, a representative sample will be collected from the tank into which the waste is to be unloaded. The sample will be evaluated for the compatibility characteristics listed above. If it is determined that the mixture is incompatible, the waste will not be placed into that receiving tank. If the waste is determined to be incompatible with the tank materials of construction or with the tank contents, the procedure will be repeated, as needed, until a compatible tank is available. If no compatible tank is available, the load may be rejected and returned to the generator or transshipped off-site to another TSDF.

3.5 MDWTP Waste Bulking and/or Consolidation

Wastes that are bulked and mixed, (excluding empty containers, site generated debris or closed and intact containers of non-hazardous waste), are subjected to the same compatibility and waste code evaluations as applied to wastes that are mixed in the treatment tanks. The following includes a list of items that may be bulked or consolidated.

- Empty Containers – as defined in Part 111, under Specific Conditions and are bulked in a roll-off container.
- Site Generated Debris – includes articles, equipment, clothing (such as personal protection equipment); ringbolts and rings from containers; pallets and pieces of pallets, etc., which are bulked in a roll-off container.
- Closed and intact containers of non-hazardous waste –non-hazardous solid waste in which all openings on the containers are closed.
- Liquid or solid hazardous waste containers being consolidated into larger or fewer containers (not for treatment at MDWTP)

I. Containers may need to be combined into larger or fuller containers (such as prior to transshipment)

II. If Roll-off containers or trailers will be used for consolidation, a liner will be utilized when bulking listed hazardous waste to prevent contamination from listed wastes to characteristic wastes.

III. All of the waste consolidated into a different container will only be done in the NCSA, the East Bay or West Bay.

IV. Compatibility - Waste to be consolidated will be from the same waste stream or will be evaluated to ensure that the waste being consolidated is compatible. If not from the same waste stream, samples will be added to a mock tank for compatibility prior to being consolidated.

V. The following waste streams will not be consolidated: reactives, ignitables, cyanides, incompatibles and odorous.

- Solid (non-liquid) hazardous waste containers being bulked into a batch for treatment at MDWTP

I. All of the waste bulked into a roll-off or trailer will only be done in the NCSA, the East Bay or West Bay.

II. The roll-off or trailer will utilize a liner when bulking listed hazardous waste to prevent contamination from listed wastes to characteristic wastes.

III. The containerized waste to be bulked in a roll-off or trailer will be pre-assigned to batch.

IV. Compatibility - Samples from the containers will be added to a mock tank for compatibility prior to being bulked into a roll-off or trailer.

V. After all of the containers assigned to that batch are bulked, the batch in the roll-off or trailer will be transferred to an assigned storage/treatment tank for treatment.

VI. The following waste streams will not be bulked: reactives, ignitables, cyanides, incompatibles and odorous.

3.6 Procedures for Ignitable, Reactive, and Incompatible Wastes

WDI/MDWTP utilizes waste characterization data provided by the generator as well as analytical screening and testing procedures to obtain information regarding waste ignitability, reactivity, or incompatibility prior to treatment and/or storage. MDWTP also evaluates this information relative to waste compatibility with the facility equipment and treatment processes. Containerized wastes are segregated for storage following the DOT Segregation Chart (See Table 1 of the WAP). Wastes that are incompatible will not be stored adjacent to each other.

MDWTP does not accept for treatment ignitable wastes having a flashpoint less than 90°F. Ignitability data for wastes is obtained through process knowledge and/or performing flashpoint or ignitability screening tests, as described in Section 4. Ignitable wastes with a flash point less than 90°F may be received and subsequently transshipped. Containers accepted at MDWTP for transshipment are uniquely marked so that they can easily visually identified as a transship waste stream.

MDWTP does not accept for treatment wastes exhibiting the characteristic of reactivity. D003 (deactivated) waste may be accepted for treatment. Reactive wastes may be received and subsequently transshipped. MDWTP evaluates potential reactivity characteristics through the use of process knowledge and for potential cyanide (CN) or sulfide-containing wastes, through analysis for total, amenable and reactive CN, and reactive sulfide. To evaluate the potential for incompatibility of wastes with the facility equipment, treatment processes, or with other wastes upon mixing/blending, MDWTP uses process knowledge, and compatibility testing described in Sections 3.4.1 – Container Storage, 3.4.2 – Tank Storage and 3.4.3 – Lab Compatibility Test. If the review of the waste characterization data and/or compatibility testing indicates a potential for incompatibility and unacceptability at the MDWTP, the wastes will be either rejected and returned to the generator or transferred to another permitted TSDF capable of managing the waste in accordance with the procedure outlined in Section 3.3.1 – Off-Specification and Rejected Load Procedures.

The Vertical Liquid Tanks are equipped with combination pressure relief valves/flash arrestors on top and high temperature cut-off valves at the bottom. These tanks are constructed and located in compliance with NFPA Chapter 30 regulations for flammable liquids, or in the vicinity of loading flammable liquids.

Wastes received in containers will be staged and stored in accordance with DOT Separation Requirements. Containers remain closed during storage except for during sampling.

Smoking is allowed at Site 2 (MDWTP/WDI) only at a few designated areas. Maintenance work done at MDWTP follows the same standards described above for operation work. Hot Work Permit will be granted in advance and air monitoring testing will go on to prevent a flammable atmosphere before any operation goes underway.

3.7 MDWTP Waste Treatment Technologies

3.7.1 Chemical Stabilization

The MDWTP treats wastes that require treatment to comply with the LDRs through chemical stabilization using a pozzolanic-type process incorporating CKD, lime, and other select reagents. Certain wastes may require more than one type of treatment, including neutralization, deactivation, chemical oxidation, and/or chemical reduction using reagents such as lime, oxidizing or reducing agents, to convert selected waste constituents into a physical or chemical form that is less soluble, less hazardous and/or more suitable for subsequent stabilization.

3.7.2 Chemical Oxidation

Hazardous wastes containing organic constituents above the LDR levels are chemically oxidized at the MDWTP. The chemical oxidation process is described below and detailed in Figure 2. Chemical oxidation is also discussed as one of the Best Demonstrated Available Technologies (BDAT) for managing organic contaminated waste in 40 CFR 268.42 and Appendix VI.

Oxidation is the process in which an atom or compound acquires electrons (the oxidizing agent or oxidant) and reduction is the process in which an atom or compound loses electrons (the reducing agent or reducant). The two processes always occur simultaneously with one compound acting as the oxidant and the other the reductant.

For the treatment of hazardous organic containing waste, MDWTP typically uses a sodium hypochlorite solution as the oxidizing agent. While sodium hypochlorite is the predominant oxidant used, MDWTP may occasionally use other oxidizing agents, including but not limited to hydrogen peroxide and potassium permanganate. In the oxidation process, electrons are stripped from the organic molecules to the extent that the carbon-to-carbon bonds are broken and carbon dioxide, sodium chloride and water are formed. Organic compounds are destroyed in this mildly exothermic reaction.

The amount of oxidant used in the treatment is determined by trained personnel and is a function of 1) the concentration of all organics in the waste, or 2) the treatability study run on the waste, and/or 3) the trained personnel's previous experience with the waste. Batches treated by chemical oxidation must be solidified by chemical stabilization before landfilling and must also be determined to pass the LDR standards as described in Section 3.8.

3.7.3 Treatability Studies (see Table 2, Table 3 & Section 4)

The pre-approval analyses for specific wastes to be treated to meet the applicable LDR(s) is specified in Table 3 and Section 4 – Waste Analysis Parameters. A bench-scale treatability study is performed to verify acceptability with the MDWTP treatment process and the treatment "recipe" required to meet the applicable treatment standards. The treated waste samples are analyzed as specified in Table 2, Table 3 and Section 4.

These pre-approval treatability studies are used to adjust the treatment processes for specific waste types and batches. Example treatment approaches for typical hazardous waste types are presented on Figures 1 through 4.

These treatment operations may combine several wastes or shipments from various generators to facilitate operational efficiency and utilization of available processing capacity. Batch treatment of multiple wastes and/or shipments will be based on chemical compatibility, USEPA hazardous waste numbers, and treatment requirements.

Post-treatment analyses, includes the TCLP and, where applicable, specific constituent analyses are performed on each batch of hazardous waste prior to landfill disposal. This post-treatment analysis is used to demonstrate that the treatment residue meets the LDRs. (see Table 2 and Table 3)

MDWTP conducts treatability testing to ensure that wastes can be treated to the required LDR levels prior to acceptance of the waste. Examples of possible triggers for a treatability study are listed below:

- The waste type not previously treated at MDWTP
- The waste is generated by a process not previously treated at MDWTP
- The waste has levels of constituents outside the range normally treated at MDWTP
- The waste codes or constituents not previously treated at MDWTP

Tables 2 and 3 are provided to assist in guiding the chemists and technicians in determining if a treatability test is needed.

The treatability test involves simply mixing waste and treatment reagents in a ratio developed by the laboratory. Measured volumes of the waste are mixed with the treatment agents. Mixing is designed to emulate retention time in the pugmill mixer and mixing time per unit of waste in the treatment tanks. After mixing, a sample of the waste is collected for analysis for the constituents of concern. A treatability report is then prepared showing the after treatment concentrations of the constituents of concern. This report is placed into the waste stream technical approval file prior to acceptance of the waste.

To successfully treat certain waste streams, a modification of the standard process may be required. Modified treatments are first verified in the laboratory, then implemented at the plant once the waste is received. Modified treatments are considered Confidential Business Information. It is important to note that all treatments are verified through actual post treatment analysis of treatment residue, prior to disposal of the waste.

3.7.4 Mixing, Blending, & Commingling of Wastes for Treatment

As part of the treatment and storage process, various individual waste streams are mixed, blended, and/or commingled. The blending operations are conducted by MDWTP Operations personnel under the direction and careful supervision of MDWTP's laboratory and treatment chemists.

3.7.5 Authorization to Mix or Blend

See Section 3.4.3, "Lab Compatibility" for a detailed discussion.

3.8 Land Disposal Restrictions (LDRs)

3.8.1 Waste Not Subject to the LDRs

The MDWTP stabilization process will also be utilized to treat wastes not subject to the LDRs, to solidify free liquids and render the waste more suitable for handling and landfill disposal.

The post-treatment analyses will include a visual observation, to ensure no free liquid is present. A paint filter test may be performed on selected loads when determined necessary by visual inspection.

3.8.2 Wastes Meeting the LDRs

Wastes that are certified, through analysis, to meet the LDRs specified in 40 CFR 268 may be directly landfilled at WDI or another off-site TSDF. The LDR certification and notification, and analytical documentation will be provided for each waste stream disposed of at WDI or shipped to another TSDF. Per 40 CFR 264.73, the required information will be kept as part of the operating record.

3.8.3 Wastes Requiring Treatment & LDRs

Wastes requiring deactivation, chemical oxidation, chemical reduction, and/or stabilization at MDWTP will be treated in batch operations. Each batch may contain multiple USEPA hazardous waste numbers and treatment standards. The treated batches will be held in the treatment/storage tanks or in roll-off boxes or trailers while testing is performed prior to disposal (see Section 2.3). Treatment batch residues will be sampled and analyzed to determine whether the batch meets the applicable treatment standards defined in 40 CFR 268. Treatment batch residues, resulting from the treatment operations that exceed the applicable LDRs, will be reevaluated. Options include re-testing after additional cure time, retreating on-site until the LDRs are achieved or sent off-site for further treatment to meet the LDRs. Any off-site shipments will be accompanied by the LDR notification, a manifest, and data for the waste for the off-site TSDF in accordance with 40 CFR 268.7(a)(1).

Treatment residues that meet the applicable LDRs, will be disposed at WDI or another TSDF. The LDR certification, notification and analytical documentation will be provided for each waste disposed of at WDI or shipments to another TSDF. Per 40 CFR 264,73, the required information will be kept as part of the operating record.

3.8.4 Characteristic Wastes & LDRs

Characteristic wastes, which are batch-treated separately from listed wastes, may be disposed of in a solid waste/Subtitle D landfill, if it is determined that the LDRs have been achieved and the treatment residue no longer exhibits the characteristics of hazardous waste and all applicable underlying hazardous constituents (UHCs), have been treated in accordance with the Universal Treatment Standards (UTS) at 40 CFR 268.

3.8.5 Hazardous Debris & LDRs

As stated in 40 CFR 268.45, Hazardous debris (>60mm) must be treated prior to land disposal, unless the debris is no longer contaminated with hazardous waste or the debris is treated to the waste-specific treatment standards specified in 40 CFR 268.45 using technologies identified in Table 1 of 268.45.

MDWTP will ensure that debris requiring treatment to the waste specific treatment standards is treated to those standards or that the technology standard is met. MDWTP anticipates receiving hazardous debris that may be contaminated with any code or codes identified in Appendix A of the WAP.

Characteristic ignitable or corrosive hazardous debris will be deactivated at MDWTP during the micro-encapsulation process prior to landfill disposal. If immobilization, such as micro-encapsulation or macro-encapsulation, is used in a treatment train, it will be the last treatment technology applied. This requirement also will apply to debris contaminated with two or more contaminants subject to treatment. Hazardous debris will be treated for each contaminant, subject to treatment as specified by 40 CFR 268.45(b) for toxicity characteristic debris and debris contaminated with listed wastes. CN reactive debris will not be accepted by MDWTP.

MDWTP uses the micro- and macro-encapsulation immobilization technologies listed in 40 CFR 268.45 to achieve the performance standard of reduced leachability of the hazardous contaminants, in the case of micro-encapsulation, and completely encapsulates debris with a material(s) that is resistant to degradation by the debris and its contaminants and the material into which it may come into contact after placement (leachate, other waste, microbes), in the case of macro-encapsulation.

Treated hazardous debris will be managed as specified in 40 CFR 268.45. When treating debris in accordance with the alternative treatment standards for debris, the MDWTP uses only the immobilization technologies of micro and macro-encapsulation. Hazardous debris contaminated with listed or characteristic waste that is treated by micro or macro-encapsulation at the MDWTP are properly disposed in licensed Subtitle C landfills and are accompanied by an LDR notification and certification form in accordance with 40 CFR 268.7(b)(5). Treatment of debris using one of the technology specific immobilization treatment standards at 40 CFR 268.45, constitutes compliance with the LDRs and no testing after treatment is required prior to disposal.

3.9 Macro-encapsulation

3.9.1 Description of the Macro-encapsulation Unit

The macro-encapsulation unit is made of approximately one inch thick polyethylene using an injection molding process to create a rigid, one-piece "tub" that fits within a roll-off or is self supporting. The macro-encapsulation units can be manufactured in any size but are most commonly manufactured to fit within a 20-yard roll-off. To seal the unit, a sheet of the same polyethylene in approximately the same thickness is screwed onto the lip of the tub using approximately 120 self-tapping screws. Screwing the down the lid provides a water-tight seal that may be augmented with caulking or glue.

Debris placed within the macro-encapsulation units are jacketed within the polyethylene in an inert, durable, water tight material that will substantially reduce surface exposure to potential leaching media. The inert polyethylene material will completely encapsulate the debris and is resistant to degradation by the debris and debris contaminants managed by MDWTP and the wastes, leachate, or microbes with which it will contact once landfilled in a licensed hazardous waste cell.

3.9.2 Description of the Macro-encapsulation Process

Macro-encapsulation will be performed as follows:

1) Debris will be placed into one of the treatment tanks, Tanks A – H (formerly tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A, 10B), or directly into a macro-encapsulation unit.
2) In the treatment tank, the debris is mixed, as needed, with an inert, finely divided material to fill the void spaces when encapsulated and to provide cushioning material. The inert filler includes cement kiln dust, sand, solidified non-hazardous waste, waste treated to the LDRs, or other non-biodegradable sorbent or fixation media. Fill material is also added directly to the macro-encapsulation units.
3) The debris is lifted from the tank with a backhoe and placed into a macro-encapsulation unit or is placed directly into the unit. As with dump trailers and dump trucks currently loaded with treated waste within MDWTP, the macroencapsulation units is also loaded within MDWTP.
4) The lid is screwed into place on the macroencapsulation unit.
5) Macroencapsulation approvals will specify "special burial" in the licensed hazardous waste cell. The special burial designation will ensure that the macroencapsulation units are carefully placed in the cell to ensure that they are not ruptured during placement or after placement. For macroencapsulated debris shipped to other permitted TSDF, guidance will be provided, to extent needed so that the macroencapsulation unit can be unloaded without rupturing.

3.9.3 Macro-encapsulation Capacity

Macro-encapsulation treatment capacity is a function of available tank space. Macro-encapsulation of hazardous debris will be counted against the permitted treatment capacity of the MDWTP on a daily basis as are all other hazardous wastes treated in the tanks. All permitted tank treatment methods, including micro- and macro-encapsulation, are performed within the state license and federal permit capacity limitations as stipulated in Section A-1 of this application.

4.0 WASTE ANALYSIS PARAMETERS

4.1 Criteria for Parameter Selection and Rationale

The parameters selected for analysis of wastes managed by the facility and the rationale for their selection is based on the physical/chemical characteristics of the waste, the regulatory and operating license requirements for treatment and/or storage of the waste, the information and analytical data supplied to MDWTP by the waste generator and the process control data necessary to manage the waste by the MDWTP's treatment and/or storage operations. The waste analysis used by the facility to manage wastes for treatment and/or storage include the following:

4.1.1 Fingerprint Analyses

These analyses may be performed on generator samples for pre-approval of the waste for management at the facility and are also performed on samples of each waste load prior to load acceptance, except for those listed in section 3.1.2. These analyses may also be performed if the generator or WDI/MDWTP determines that there is a change in the process generating the waste. The fingerprint analyses include screening procedures to provide data regarding the general physical and chemical characteristics of the waste. Table 3 indicates which tests will be used and under which conditions.

4.1.2 Supplemental Analyses (indicated with a "O" in Table 3)

These analyses are generally waste-specific based on the physical/chemical characteristics of the waste, the USEPA or Michigan hazardous waste number (determined by the generator), the process generating the waste, treatment, storage, or disposal process control requirements, and regulatory treatment requirements (such as the LDR or facility operating license conditions).

These analyses may be performed to supplement the generator-supplied information regarding the waste and the fingerprint analyses and include standard analytical USEPA and/or American Society for Testing and Materials (ASTM) methods.

Waste characterization data is provided by the generator using the GWCR, as described in Section 3.1.1. The generator data and analyses provide the facility with the information needed to properly manage a waste and ensure that the waste shipment received matches the identity and characteristics of the waste approved and designated on the accompanying Hazardous Waste Manifest (manifest) or shipping papers.

4.2 Analytical Parameter Descriptions (Pre-Approval/Re-Approval, Pre-Acceptance & Post-Treatment)

The analytical parameters used to manage wastes for treatment, storage and disposal include the fingerprint analyses or supplemental analyses (if necessary) are described below. Table 3 indicates which tests will be used and under which conditions.

Color	This procedure evaluates the color of waste samples/information presented for pre-approval and compares the color of incoming loads of waste.
Consistency	A comparison of the incoming wastes consistency of originally-approved material. Consistency descriptors are as follows: Dust, Solid, Semi-Solid, Sludge, Liquid and debris.
Compatibility Test	The procedures will be followed as outlined in the current version of the Work Plan for the Lab Compatibility Test at the end of this WAP.
Cyanide	A determination that the waste does not meet the criteria set forth in 40 CFR 261.23(a)(5). The test method to be used is the Total and Amenable Cyanide Method 9010, found in SW-846 or Method 7.3.3.2 for Reactive CN. Untreated waste containing more than 250 ppm of reactive or releasable CN is not accepted for treatment but may be stored in containers and transshipped.

Flashpoint / Ignitability	Used to determine the flash point of a liquid to verify approval under limits of acceptable only above 90°F flashpoint. **Test Methods for Liquids:** a. Setaflash Closed Cup Tester - American Society for Testing and Materials (ASTM) Standard D-3278-78 b. Pensky-Martin Closed Cup Tester - ASTM D-93-79 or D-93-80 **Test Methods for Sludges / Solids:** 5 plus or minus (≠) 1 grams of waste is placed in a small container. Ignition is attempted with a match for 5 seconds. If ignition occurs and the waste burns vigorously and persistently, the waste is not acceptable for treatment but may be stored prior to transshipment.
Hexavalent Chromium	The waste is screened using either a Hach® type chromate test kit or equivalent, or USEPA Method 7196. This method is used to screen for the presence or absence of hexavalent chromium (Cr^{+6}).
Hydrogen Sulfide	A test to determine if the specific rate of release of hydrogen sulfide in waste is above 500 ppm upon contact with an aqueous acid. (SW-846, Section 7.3.4.2).
Odor (Incidental)	Potentially problematic odors detected in the routine laboratory handling of a sample may result in rejection of the load unless the waste can be managed in such a way as to minimize odor emissions.
Oxidizer	No method for the oxidizer screen was provided in USEPA SW-846. The procedure used is as follows: Potassium iodide starch (KI) indicator paper is used to determine the presence of organic peroxides or other oxygen donors in aqueous wastes. A sample is considered an oxidizer if a reaction occurs when the addition of concentrated sulfuric acid produces orange gas (NOX).
Paint Filter Test	This method (USEPA 9095) may be used to determine if free liquid is present in a waste, if this is not apparent by visual inspection.
PCBs	This method (SW-846 8082) is used to detect polychlorinated biphenols (PCBs). PCB analysis will be conducted on all wastes that contain oily residue, or are suspected of containing PCBs. Oily residue is defined as waste streams containing over 50 percent oil, no matter the origin.
pH	A comparison of the pH of the incoming waste with the pH range of the originally approved material is performed. pH methods used include SW-846 9040B, 9041A, 9045C.
Radiation Screen	A sample is passed near the detector window of a geiger counter, and the reading of the meter is noted and compared to the background reading. (See Section 3.1.3 Special Wastes; Section 3.1.3.1 Source Material, NORM or TENORM)

Reactivity - Water	A determination that the waste does not react violently with water during processing. In the course of this test water reactivity is addressed. The test method is as follows: Approximately ten milliliters (mls) or equal volume of waste is mixed rapidly with approximately ten mls of water solution in a beaker, the waste is compatible with the process if no incompatible waste reaction occurs as defined in 40 Code of Federal Regulations (CFR) 264, Appendix B, paragraph 1. The testing materials are identified water reactivity.
Reactivity – Acid	Standard Method 2310 (current Edition) is used to measure the acid content in waste in either mg/L (for aqueous samples) or mg/kg (for solid samples). Acidity is determined by potentiometric titration.
Suspended Solids	Is used to determine suspended solid content of aqueous wastes or sludge for the purpose of determining wastewater or non-wastewater categories under 40 CFR Part 268. This is performed using generator-provided information/analysis or from data obtained from the preparation of TCLP extracts (Method 1311).
TCLP	A Toxicity Characteristic Leachate Procedure (TCLP) test is used to determine if a solid waste meets or exceeds the maximum concentrations extractable of contaminants listed in 40 CFR 261.24, Table I. The test methods to be used are described in 40 CFR Part 261, Appendix II, Method 1311. Equivalent methods must be approved by the Director. (See Section 3.0)
Total Metals	A test to determine the total metal (i.e., constituent concentration in waste) content of wastes (USEPA SW-846, methods 6000, 7000).
VOCs	This SW-846 (USEPA) analytical method (8021B or 8015BA) is used to determine the total concentration of volatile organic compounds (VOCs) in waste matrices. Only the constituents identified for a particular waste stream are analyzed.
40 CFR Par Appendix V	↑BS ich a waste is listed. The Appendix VII esent by MDWTP personnel, and the waste rmation on a particular waste stream is , based either on analysis or from the 40 which describe the basis of listing in nalysis is performed by MDWTP (on-site he methods listed below is used, depending se methods are provided in US EPA's "Test e," SW-846 (current Update). 8060, 8270)) 00 series)

4.3 Receiving

The analytical parameters used for pre-acceptance may include fingerprint and/or supplemental analyses for each incoming shipment of wastes arriving at WDI/MDWTP are indicated in Table 3. Supplemental analyses performed, is a function of the designated USEPA or Michigan hazardous waste numbers and waste characteristics. The analytical parameters performed for receiving incoming shipments of waste -are indicated in Table 3 except as noted in Section 3.1.2.

4.4 Post-Treatment

The analytical parameters that are used for post-treatment may include fingerprint and/or supplemental analyses. These parameters are defined by the waste codes and UHC associated with the waste in process and are summarized in Tables 2 and 3. Post treatment testing will not be performed on micro or macro-encapsulated debris.

5.0 ANALYTICAL TEST METHODOLOGIES

5.1 Fingerprint Parameters and Methods

The "fingerprint" parameters include screening procedures and test methods that have been developed within the waste management industry to provide a general identification of specific physical and chemical characteristics of wastes handled. These parameters are presented in Table 3 and are described above in Section 4.2.

5.2 Supplemental Parameters and Methods (indicated with a "O" in Table 3)

The additional parameters include commonly accepted standard analytical methods developed by the USEPA, ASTM, or as a standard waste management industry procedure. These parameters, presented in Table 3 and described above in Section 4, are used, as necessary, for additional characterization of the waste and determination of specific properties and/or constituents to ensure proper treatment, and/or storage in accordance with current regulations and the operating license.

Fingerprint analysis and additional analyses (if necessary) are used to ensure that restricted wastes are not accepted by the facility and that incompatible wastes are not commingled. Specific analyses may be used for various waste matrices.

5.3 Laboratory Capabilities

An analytical laboratory is maintained on-site for the purpose of conducting the analytical procedures associated with this WAP to evaluate, approve, and monitor the characteristics of waste received from their customers and managed by the facility. The laboratory utilizes modern analytical equipment and facilities in the analysis of waste samples. In addition, trained chemists are employed (individuals that possess educational and/or work experience qualifications necessary to be proficient in performing waste analysis) who utilize standardized procedures for maintaining quality assurance (QA) and quality control (QC) requirements associated with the analytical procedures.

The laboratory is currently capable of performing the fingerprint analyses, as described in this WAP, as well as standard USEPA and ASTM methodologies for analyses of a variety of parameters in the following general categories:

1) Water quality parameters/inorganics, non-metallics;
2) RCRA hazardous waste characteristics;
3) Organic Constituents:
    (a) VOCs;
    (b) Semi-VOCs;
    (c) Pesticides, herbicides; and
    (d) PCBs.
4) Metals.

The Laboratory's capabilities may be subject to change as necessitated by regulations, operating requirements, or advances in analytical methodologies and equipment.

5.4 Quality Control/Quality Assurance

The Laboratories maintain a Laboratory Quality Assurance Program (LQAP) to insure the accuracy, precision, and reliability of the laboratory results produced for our customers, or at the request of regulatory or accrediting bodies. Management, administrative, statistical, investigative, preventive, and corrective techniques are employed to maximize the reliability of the analytical data.

This LQAP establishes the policies and procedures regarding:

- Glassware preparation;
- Reagents, solvents, gases, and standards;
- Samples and sampling;
- Instrument calibration procedures;
- Analytical procedures;
- QC checks;
- Data handling and reporting;
- Preventative maintenance;
- Corrective actions;
- Orientation and training;
- Performance and system audits; and
- Subcontracted laboratories.

The Laboratory uses standard analytical procedures developed by the USEPA and ASTM.. The Laboratory equipment maintained on-site is calibrated within acceptable limits, according to USEPA and ASTM or the manufacturer specifications prior to use. The Laboratory instruments are periodically inspected, maintained, and serviced according to manufacturer specifications. Reference standards and QC samples (i.e., checks, spikes, laboratory blanks, duplicates, and splits) are used to determine the accuracy and precision of procedures, instruments, and operators. Quality assurance/quality control (QA/QC) data is recorded with the test results. Records of all pertinent laboratory calibration, analytical, and QC activities and data are maintained by the laboratory.

The laboratory QA/QC procedures used by the facility assist in assuring that the data obtained are precise, accurate, and representative of the waste stream analyzed.

The analytical QA/QC procedures follow the method-specific requirements specified in "Test Methods for Evaluating Solid Waste: Physical Chemical Methods," SW-846, where applicable.

6.0 SAMPLING METHODOLOGIES

6.1 General Methodologies

Each incoming shipment of non-hazardous and hazardous waste is inspected and sampled, except those listed in section 3.1.2, to ensure that the waste received for matches the waste reviewed during the pre-approval process. The sampling techniques described herein are performed in accordance with the techniques outlined in USEPA's SW-846.

6.2 Sampling Program and Equipment

USEPA SW-846 will be followed, whenever possible, when choosing sampling equipment and methodologies. If a method is not provided in USEPA SW-846, then a different method will be used as outlined in Section 4.2. The person sampling is trained in the selection and use of the sampling device and is thoroughly familiar with the sampling requirements.

Sampling equipment is constructed of non-reactive materials such as glass, polyvinyl chloride (PVC) plastic, aluminum, or stainless steel. Care is taken in the selection of the sampler to prevent cross-contamination of the sample and to ensure compatibility of materials.

Sampling is performed for each waste in a manner that ensures the samples are as representative as possible under the conditions of the sampling event. All bulk and containerized hazardous waste loads will be sampled prior to acceptance, except for waste specified in Section 3.1.2. All samples must be appropriately labeled. The following information is included on the label:

Type of Sample	**Label Requirements:**
Bulk Loads	Transporter Name Truck #
Container Loads	Waste Code Manifest # Approval # Drum # and/or barcode
Treatment Tanks	Batch ID # Date Time Sampler

Observations or unusual conditions during sampling are noted as comments on the label. No chain-of-custody (COC) form is used with samples on-site, since the samples are relinquished directly to the on-site Laboratory. A COC will accompany any sample being sent to an off-site Laboratory.

6.3 Specific Sampling Procedures

6.3.1 Containerized Waste

Each incoming stream of waste in containers (non-hazardous/hazardous) will be sampled, except those listed in section 3.1.2, and the parameters according to Table 3 performed on each sample.

The containers are labeled with an EQ identification label, which numbers each container per manifest line item. Alternately, the numbers will be spray painted on each container. Once numbered, the containers to be sampled will be determined using www.random.org or an equivalent method listed in SW-846. Each hazardous waste stream will be sampled at 10-percent of the total number of containers.

The separate samples collected will be composited by waste stream in the MDWTP laboratory to form a single sample for analysis. Individual samples that are visually dissimilar will not be composited.

Samples will be collected from containers by utilizing the sampling equipment recommended by the USEPA in USEPA, SW-846 and Section 6.2. MDWTP personnel will usually utilize container thieves or coliwasas to sample aqueous waste and trier or scoops to sample granular or solid, sludge matrices.

6.3.2 Bulk Waste

Each incoming stream of waste received at the MDWTP in a bulk form, except those listed in Section 3.1.2 will have a sample collected and analyzed for the fingerprint parameters in Table 3. Samples will be collected from each vehicle. A clean carbon steel, stainless steel auger or disposable PVC trier will be utilized to collect solid samples. Bulk aqueous tankers will be grab sampled utilizing a thief or coliwasa-type sampler to collect the sample from varying depths for analysis.

6.3.3 Treatment/Storage Tanks

Treated, stabilized waste will be sampled from the MDWTP treatment tanks in order to verify that the waste meets the LDRs prior to land disposal with the exception of microencapsulated and macroencapsulated debris. Samples of treated, stabilized waste will be collected from random vertical and horizontal locations.

A grab sample will be collected from a random vertical and horizontal location using a backhoe to reach the selected sampling point, collecting the sample from the backhoe bucket with a disposable scoop or cup. The sample is then taken to the laboratory for analysis. The location from which the random grab sample is taken will be marked in a grid in the Batch packet.

6.3.4 Transshipped Wastes

Any waste to be transshipped off-site to other permitted TSDF's will be received under a valid MDWTP approval and management will comply with this WAP.

6.3.5 Waste Materials Utilized as Treatment Reagents

MDWTP will obtain a chemical assay of waste materials such as lime or cement kiln dust (CKD) from the material source/vendor for evaluation prior to approval for use at MDWTP.

6.4 Equipment Decontamination

All equipment used in the collection of waste samples will either be disposable (e.g., scoops or container thieves) or sufficiently cleaned to remove observable contamination prior to sampling.

6.5 Sample Preservation and Storage

- Hazardous waste samples are generally not amenable to preservation;
- Samples for volatile organics are refrigerated at 4-degrees Celsius (°C) until analyzed and must be analyzed within seven days;
- Samples for semi-volatiles, if necessary, must be extracted within seven days and analyzed within 40 days;
- Aqueous samples for total organic carbon (TOC) analyses are refrigerated at 4°C until analysis and aliquots for metals analysis are preserved by the addition of HNO_3 to pH <2; and
- Samples are stored in the laboratory refrigeration unit.

6.6 Quality Control/Quality Assurance

Sampling QA/QC policies are found in the QA/QC manual, which is maintained by the Laboratory.

6.7 Health and Safety Protocols

During sampling and laboratory-related activities, personnel will utilize precaution to reduce the potential for incidents, injuries, or accidents. WDI/MDWTP has established a Hazardous Waste Operations (HAZWOPER) Facility Health and Safety Plan (HSP) in accordance with Michigan Occupational Safety and Health Administration (MIOSHA) Act 154 and R325.52129 for operations at TSDFs.

WDI/MDWTP personnel are HAZWOPER trained in accordance with the provisions of R325.52129(8) and follow health and safety (H&S) requirements, including PPE requirements specified in the facilities' standard operating procedures (SOPs).

REFERENCES

American Society for Testing and Materials, "Annual Book of ASTM Standards."

United States Environmental Protection Agency, "Test Methods for Evaluating Solid Waste: Physical Chemical Methods." SW-846, Third Edition, September 1986 as amended by Update I, (July, 1992), II (September 1994), IIA (August 1993), IIB (January 1995), III (June, 1997)

United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, April 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste;" A Guidance Manual.

Standard Methods for the Evaluation of Water and Waste Water, 18th Edition

Note: For Industry Standards see the QA/QC Program Manual.

TABLE 1 - SEGREGATION AND SEPARATION CHART OF HAZARDOUS MATERIALS

CLASS OR DIVISION		2.1	2.2	3	4.1	4.3	5.1	5.2	6.1*	8A	8B	9
Non-Flammable Gases	2.1	C	C	C	C	C	C	C	C	C	C	C
Non-Toxic, Non-Flammable Gases	2.2	C	C	C	C	C	C	C	C	C	C	C
Flammable Liquids	3	C	C	C	C	C	X	C	C	C	C	C
Flammable Solids	4.1	C	C	C	C	C	C	C	C	X	X	C
Dangerous when wet materials	4.3	C	C	C	C	C	C	C	C	X	X	C
Oxidizers	5.1	C	C	X	C	C	C	C	C	X	X	C
Organic Peroxides	5.2	C	C	C	C	C	C	C	C	X	X	C
Poisonous Liquids (NOT PG I, Zone A materials)	6.1*	C	C	C	C	C	C	C	C	C	C	C
Corrosive Liquids-Acids	8A	C	C	C	X	X	X	X	C	C	X	C
Corrosive Liquids-Bases	8B	C	C	C	X	X	X	X	C	X	C	C
Other Regulated Materials and Non-Hazardous Wastes	9	C	C	C	C	C	C	C	C	C	C	C

Notes:

- ✓ This chart is from the USDOT Segregation and Separation Chart of Hazardous Materials, 49 CFR Subpart C (177.848) & additionally segregates the corrosive wastes into acids and bases.
- ✓ Acids have a pH ≤ 2.0 and bases have a pH ≥ 12.5.

* = Other than Poisonous Liquids PG I, Zone A will not receive wastes with Class 1, or Division 2.3, 4.2, 6.1 PG I, Zone A Hazardous Material classifications.

C = Compatible
X = Non-Compatible

TABLE 2 – PROCESS LOGIC

TARGET CONSTITUENTS	TYPICAL WASTE CODES	TREATMENT TRAIN	POST- TREATMENT PARAMETERS
Arsenic	D004	STABL	TCLP Metals
Barium	D005	STABL	TCLP Metals
Cadmium	D006	STABL	TCLP Metals
Chromium (Hexavalent)	D007 (Cr+6)	CHRED fb STABL	TCLP Metals
Lead	D008	STABL	TCLP Metals
Mercury	D009	STABL	TCLP Metals
Selenium	D010	CHRED fb STABL	TCLP Metals
Silver	D011	STABL	TCLP Metals
Nickel	F006-F009, F011, F012	STABL	TCLP Metals
Low [CN-] with Metals and Cr+6	F006, F007 F008, F009 F011, F012 F019	CHOXD fb CHRED fb STABL	T-CN A-CN TCLP Metals
Low [CN-] No Metals/ Organics	F010	CHOXD	T-CN A-CN TCLP Metals
Metals, Zinc	K061	STABL	TCLP Metals
Ignitable Low TOC Subcategory <10% TOX	D001	DEACT/CHOXD fb STABL	Ignitability
Ignitable High TOC Compressed Gases Strong Oxidizers Ignitable Solids	D001	Transshipment	NA
Oxidizers (No Strong Oxidizers Except for Transshipment)	D001	DEACT/CHRED fb STABL	Ignitability
Corrosives With Metals, Organics	D002/ICR	DEACT/NEUT fb CHOXD fb CHRED fb STABL	PH* TCLP Metals Total Organics
Low [ ] Organics	F001 – F005	CHOXD fb STABL	Total Orgranics
Low [ ] Organics	D018 – D043	CHOXD fb STABL	Total Orgranics
Hazardous Waste Debris	All Codes & Contaminants Subject to Treatment	MICRO	NA
Hazardous Waste Debris	All Codes & Contaminants Subject to Treatment	MACRO	NA
Non-Hazardous Waste	-	STABL for Free Liquids	Visual Inspection

NOTES:

- ✓ Verify treatment process conditions, sequence, reagents and dosage rates with Trained MDWTP Personnel prior to processing any wastes (Refer to batch sheet.)
- ✓ All hazardous wastes must meet LDRs prior to disposal.
- ✓ The post-treatment analyses will also include a visual observation, to ensure no free liquid is present.

ABBREVIATIONS & SYMBOLS

A-CN = Amenable Cyanide
CHOXD = Chemical Oxidation
CHRED = Chemical Reduction
DEACT = Deactivation
fb = followed by
MICRO = Microencapsulation
MACRO = Macroencapsulation
NEUT = Neutralization
STABL = Stabilization
TCLP = Toxicity Characteristic Leaching Procedure
T-CN = Total Cyanide
< = Less than
> = Greater than
[ ] = Concentration

TABLE 3 – ANALYTICAL PARAMETERS & TESTING METHODS

PARAMETER	ANALYTICAL METHOD (1)	PRE-APPROVAL	PRE-ACCEPTANCE	POST-TREATMENT
Color	See Section 4.2	R	R	
Consistency	See Section 4.2	R	R	
Ignitability	See Section 4.2	R	R	
pH	See Section 4.2	R	R	
Radiation Screen	See Section 4.2	R	R	
Reactivity – Water	See Section 4.2	R	R	
Cyanide (Spot Test)	See Section 4.2	R	O	
Odor	See Section 4.2	R	O	
Sulfide (Spot Test)	See Section 4.2	R	O	
Compatibility Test	See compatibility work plan	O	R	
Cyanide (Reactive)	See Section 4.2	O	O	
Flash Point	See Section 4.2	O	O	
Hexavalent Chromium	See Section 4.2	O	O	
Oxidizer	See Section 4.2	O	O	
PCBs	See Section 4.2	O	O	
Reactivity – Acid	See Section 4.2	O	O	
Hydrogen Sulfide (Reactive)	See Section 4.2	O	O	
Total Organic Carbon - TOX	See Section 4.2	O	O	
Paint Filter Test (1)	See Section 4.2	O	O	M
Cyanide (Total)	See Section 4.2	O	O	M
Cyanide (Amenable)	See Section 4.2	O	O	M
TCLP	See Section 4.2	O	O	M
40 CFR 261 Appendix VII Constituents:	See Section 4.2	O	O	M
- Total Semi-Volatiles	See Section 4.2	O	O	M
- Total Volatiles	See Section 4.2	O	O	M
- Total Metals	See Section 4.2	O	O	M
- Total Herbicides	See Section 4.2	O	O	M
- Total Pesticides	See Section 4.2	O	O	M

NOTES:

(1) =	Visual inspection to ensure no free liquids are present prior to disposal is performed on each load. Paint filter tests are performed on selected loads if deemed necessary by visual inspection.
PCBs =	Polychlorinated Biphenyls
TCLP =	Toxicity Characteristic Leaching Procedure
R =	Required analysis
M =	Mandated to meet treatment standards
O =	Optional (or if no designation indicates the analysis is optional)

FIGURE 1

TECHNOLOGY NAME
Deactivation (DEACT)

APPLICABLE WASTE TYPES
Wastes exhibiting the characteristics of Ignitability, Corrosivity, or Reactivity such as D001, D002, and D003 hazardous waste numbers.

PRE-TREATMENT REQUIREMENTS
Waste Specific

CRITICAL DESIGN PARAMETERS
- Dependent on which characteristic is exhibited.
- Deactivation technologies include those recommended in 40CFR Part 268 Appendix VI.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- STATE - solid, liquid, or sludge
- ALKALINITY, ACIDITY, AND pH
- FLASH POINT
- CONCENTRATION OF OTHER CONSTITUENTS PRESENT.
- DEACTIVATION BY-PRODUCTS.

NOTE: MDWTP DOES NOT ACCEPT REACTIVE WASTES

UNDERLYING PRINCIPLE OF OPERATION

The treatment standard for many subcategories of characteristic hazardous D001, D002, and D003 wastes remove the characteristic of Ignitability, Corrosivity, or Reactivity. EPA has determined that many technologies such as those listed below, when used alone or in combination can achieve the treatment standard. Example deactivation technologies include:

Stabilization (STABL)
Neutralization (NEUTR)

FIGURE 2

TECHNOLOGY NAME
Chemical Oxidation (CHOXD)

APPLICABLE WASTE TYPES

Wastes containing organics, organo-metallics, cyanides, or sulfides. Oxidize arsenic to insoluble form in waste waters or inorganic sludges from metal plating/finishing. Typical hazardous waste numbers include F006, F007, F008, F009, F011, F012, F010, F019, F001-F005, D018-D043.

PRE-TREATMENT REQUIREMENTS
Frequently requires raising pH to alkaline range.

CRITICAL DESIGN PARAMETERS

- Oxidation/reduction potential.
- Residence time.
- Amount and type of oxidizing agent - add excess and monitor ORP.
- Degree of mixing.
- pH - optimize (moderately alkaline ~10-11.5).
- Oxidation temperature.
- Amount and type of any catalyst.
- TOC may be used as surrogate parameter for organics.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- CONCENTRATION OF OTHER OXIDIZABLE COMPOUNDS.
Increases demand in reagent; high sulfide may require additional reagent.
- CONCENTRATION OF METAL SALTS (especially Pb and Ag)
Can cause excess consumption of reagent. Metal-cyanide complexes are more difficult to oxidize.

UNDERLYING PRINCIPLE OF OPERATION
The basic principle of chemical oxidation is that inorganic cyanides, selected dissolved organic compounds and sulfides can be chemically oxidized to yield carbon dioxide, nitrogen, water, salts, simple organic acids and in the case of sulfides, sulfates. Typical oxidants and reactions using sodium hypochlorite are:

Cyanide
$CN^{-}+NaOCl$ --- $OCN^{-}+NaCl$
$2OCN^{-}+3NaOCl$ --- $CO_3^{-2}+CO_2+N_2+3NaCl$

Phenol
$C_6H_50H+14NaOCl$ --- $6CO_2+3H_2O+14NaCl$

Sulfide
$S^{-2}+4NaOCl$ --- $SO_4^{-2}+4NaCl$

FIGURE 3

TECHNOLOGY NAME
Chemical Reduction (CHRED)

APPLICABLE WASTE TYPES
Reduce hexavalent chromium and selenate ions. Treat oxidizing wastes containing reducible organics, inorganic oxidizers from plating, metal finishing, chromium pigments, mining, ore processing, or chemical manufacturing. Typical hazardous waste numbers include D007, D010, F006-F009, F011, F012, and F019.

PRE-TREATMENT REQUIREMENTS
Frequently requires lowering pH to acidic range.

CRITICAL DESIGN PARAMETERS
- Oxidation/reduction potential.
- Residence time.
- Amount and type of reducing agent - add excess and monitor ORP.
- Degree of mixing
- pH - usually at lower pH; <4.
- Reduction temperature.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- CONCENTRATION OF OTHER REDUCIBLE COMPOUNDS. Increases demand in reagent. If TOC or inorganic oxidizer concentration is high, may not be applicable technology.
- CONCENTRATION OF OIL AND GREASE. Causes monitoring problems/fouling. If high, may not be applicable technology.

UNDERLYING PRINCIPLE OF OPERATION

The basic principle of chemical reduction is to reduce the valence of oxidizers and other constituents such as metals through oxidation-reduction reactions. Reducing agents such as ferrous sulfate or sodium sulfite are used to reduce specific constituents such as hexavalent chromium:

$$H_2(Cr^{+6})_2O_7+3Na_2SO_3+3H_2SO_4 \text{ ---- } (Cr^{+3})_2(SO_4)_3+3Na_2SO_4+4H_20$$

FIGURE 4

TECHNOLOGY NAME

Stabilization (STABL) / Microencapsulation (MICRO)

APPLICABLE WASTE TYPES

Wastes and hazardous debris containing leachable metals, high filterable solids content, low total organic content, and low oil and grease content. These include residuals from treatment of electroplating waste waters, characteristic and listed metal wastes.

Typical hazardous waste numbers include D004-D011, F006-F009, F011, F012, F019, K061, F001-F005, D018-D043.

PRE-TREATMENT REQUIREMENTS

- May require reducing or oxidizing metals to lower solubility states.
- May require reducing oil and grease or organic content.

CRITICAL DESIGN PARAMETERS

- Amount and type of stabilizing agent and additives.
- Degree of mixing.
- Residence time.
- Temperature and humidity
- Form of metals
- Oxidation state.
- Solubility.

WASTE CHARACTERISTICS AFFECTING PERFORMANCE

- CONCENTRATION OF FINE PARTICLES.

Very FINE particles (<No. 200 mesh) may weaken chemical bonds and increase leachability.

- CONCENTRATION OF OIL AND GREASE.

High OIL AND grease content coat particles, weaken chemical bonding, and increase leachability.

- CONCENTRATION OF ORGANIC COMPOUNDS.

High ORGANIC content (TOC) and organic compounds can inhibit curing and increase leachability.

- CONCENTRATION OF SULFATE AND CHLORIDE COMPOUNDS.

High sulfate or chloride content may interfere with chemical reactions, weaken bond strength, affect cure time, strength, and increase leachability.

- SOLUBILITY OF METAL COMPOUNDS. Metals should be present in most insoluble form.

UNDERLYING PRINCIPLE OF OPERATION

The basic principle of operation for stabilization is that leachable metals and low levels of selected organics are immobilized by the addition of stabilization reagents. The leachability is reduced by the formation of a lattice structure and/or chemical bonds that bind the contaminants into a solid matrix thereby limiting the concentrations of contaminants that can be leached when water contacts the waste material. Stabilization of metals is most effective when the metal is in its least soluble state. Typical stabilization reagents include Portland cement, lime and cement kiln dust. Micro encapsulation involves stabilization of hazardous debris such that the leachability of hazardous contaminants are reduced.

APPENDIX A

MDWTP - MID 000724831
Waste Types Acceptable for Storage, Treatment &/or Transshipment

Special Notes Regarding Permitted Waste Types (see Section 3.7)
The following Waste Code List includes all United States Environmental Protection Agency (USEPA) and Michigan Department of Environmental Quality (MDEQ) hazardous waste codes, with the following exceptions:

Ignitability –
Waste accepted for Treatment - Flash point of all wastes shall be > (greater than) = 90 °F.

Waste accepted for Storage and Transshipment - Flash point of all wastes shall be > (greater than), < (less than), or = 90 °F. Containers accepted at MDWTP for transshipment are uniquely marked so that they can easily visually identified as a transship waste stream.

Reactive wastes - (D003, K027, K044, K047, K161, and K045)
D003 (deactivated) waste may be accepted for storage, treatment and/or transshipment. These D003 deactivated waste (that may retain the code) will only be received as certified treatment residues, contaminated soil, contaminated debris, or spill residues that do not exhibit the characteristic of reactivity.

Reactive wastes may be received for storage and subsequently transshipped.

Dioxin-containing wastes - (F020-F023, F026-F028, K043, and K099)
Dioxin-containing wastes exhibiting the characteristic of dioxin shall not be accepted for storage, treatment and/or transshipment.

Dioxin-containing wastes (that may retain the code) will only be received as certified treatment residues, contaminated soil, contaminated debris, or spill residues that do not exhibit the characteristic of dioxin.

P-codes and U-codes
P and U-coded wastes may be treated at the MDWTP if they can be successfully treated by the MDWTP processes. If they cannot be successfully treated by MDWTP, the P and U-coded wastes may be received for storage prior to transshipment to another TSDF facility.

LDR –
Any waste codes that have a Land Disposal Restriction (LDR) technology-based treatment standard, other than Deactivation (DEACT), Chemical Reduction (CHRED), Chemical Oxidation (CHOXD), or Stabilization (STABL) cannot currently be treated by the facility, except as certified treatment residues. Hazardous waste debris may be treated as a waste stream or by micro-encapsulation or macro-encapsulation.

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
D001	Ignitable liquids based on 261.21(a)(1)-Wastewaters	(I)	
D001	Ignitable liquids based on 261.21(a)(1) - Low TOC Ignitable Liquids Subcategory - Less than 10% total organic carbon	(I)	
D001	Ignitable compressed gases based on 261.21(a)(3)	(I)	
D001	Ignitable reactives based on 261.21(a)(2)	(I)	
D001	Oxidizers based on 261.21(a)(4)	(I)	
D002	Acid Subcategory based on 261.22(a)(1)	(C)	
D002	Alkaline Subcategory based on 261.22 (a) (1)	(C)	
D002	Other corrosives based on 261.22(a)(2)	(C)	
D003	Reactive waste based upon 261.23	(R)	
D004	Arsenic	(T)	7440-38-2
D005	Barium	(T)	7440-39-3
D006	Cadmium	(T)	7440-43-9
D007	Chromium	(T)	7440-47-3
D008	Lead	(T)	7439-92-1
D009	Mercury	(T)	7439-97-6
D010	Selenium	(T)	7782-49-2
D011	Silver	(T)	7440-22-4
D012	Endrin	(T)	72-20-8
D013	Lindane	(T)	58-89-9
D014	Methoxychlor	(T)	72-43-5
D015	Toxaphene	(T)	8001-35-2
D016	2,4-D	(T)	94-75-7
D017	2,4,5-TP (Silvex)	(T)	93-72-1
D018	Benzene	(T)	71-43-2
D019	Carbon tetrachloride	(T)	56-23-5
D020	Chlordane	(T)	57-74-9
D021	Chlorobenzene	(T)	108-90-7
D022	Chloroform	(T)	67-66-3
D023	o-Cresol	(T)	95-48-7
D024	m-Cresol	(T)	108-39-4
D025	p-Cresol	(T)	106-44-5
D026	Cresol	(T)	
D027	1,4-Dichlorobenzene	(T)	106-46-7
D028	1,2-Dichloroethane	(T)	107-06-2
D029	1,1-Dichloroethylene	(T)	75-35-4
D030	2,4-Dinitrotoluene	(T)	121-14-2
D031	Heptachlor (and its epoxide)	(T)	76-44-8
D032	Hexachlorobenzene	(T)	118-74-1
D033	Hexachlorobutadiene	(T)	87-68-3
D034	Hexachloroethane	(T)	67-72-1
D035	Methyl ethyl ketone	(T)	78-93-3
D036	Nitrobenzene	(T)	98-95-3
D037	Pentrachlorophenol	(T)	87-86-5
D038	Pyridine	(T)	110-86-1
D039	Tetrachloroethylene	(T)	127-18-4
D040	Trichloroethylene	(T)	79-01-6
D041	2,4,5-Trichlorophenol	(T)	95-95-4
D042	2,4,6-Trichlorophenol	(T)	88-06-2
D043	Vinyl chloride	(T)	75-01-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing; containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)	
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)	
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I)*	
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)	
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I,T)	
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and plating on carbon steel; and (6) chemical etching and milling of aluminum	(T)	
F007	Spent cyanide plating bath solutions from electroplating operations	(R,T)	

Waste Code	Waste Description	Hazard Code	CAS No.
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process	(R,T)	
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process	(R,T)	
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process	(R,T)	
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations	(R,T)	
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process	(T)	
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process	(T)	
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes; these chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. [This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in Section 261.31 or Section 261.32]	(T)	
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes; these chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution	(T)	
F032	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with □261 35 of this chapter or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i e , F034 or F035), and where the generator does not resume or initiate use of chlorophenolic formulations) This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations; this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
F035	Wastewaters (except those that have not come into contact with		

Waste Code	Waste Description	Hazard Code	CAS No
	process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium; this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
F037	Petroleum refinery primary oil/water/solids separation sludge-Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in □261 31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing	(T)	
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge-Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries; such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment fromother process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in □261 31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing	(T)	
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028)	(T)	
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)	
K003	Wastewater treatment sludge from the production of molybdate orange pigments		

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)	
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)	
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)	
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)	
K008	Oven residue from the production of chrome oxide green pigments	(T)	
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)	
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)	
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R,T)	
K013	Bottom stream from the acetonitrile column in	(R,T)	
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)	
K015	Still bottoms from the distillation of benzylchloride	(T)	
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)	
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)	
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)	
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production	(T)	
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)	
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)	
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)	
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)	
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)	
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)	
K026	Stripping still tails from the production of methy ethyl pyridines	(T)	
K027	Deactivated centrifuge and distillation residues from toluene diisocyanate production	(R, T)	
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)	
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)	
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and per-chloroethylene	(T)	
K031	MSMA and cacodylic acid	(T)	
K032	Wastewater treatment sludge from the production of chlordane	(T)	

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)	
K034	Filter solids from the filtration of hexachloro-cyclopentadiene in the production of chlordane	(T)	
K035	Wastewater treatment sludges generated in theproduction of creosote	(T)	
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)	
K037	Wastewater treatment sludges from the production of disulfoton	(T)	
K038	Wastewater from the washing and stripping of phorate production	(T)	
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	(T)	
K040	Wastewater treatment sludge from the production of phorate	(T)	
K041	Wastewater treatment sludge from the production of toxaphene	(T)	
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in theproduction of 2,4,5-T	(T)	
K044	Deactivated wastewater treatment sludges from the manufacturing and processing of explosives	(R)	
K045	Deactivated spent carbon from the treatment of wastewater containing explosives	(R)	
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds	(T)	
K047	Deactivated pink/red water from TNT operations	(R)	
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)	
K049	Slop oil emulsion solids from the petroleum refining industry	(T)	
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)	
K051	API separator sludge from the petroleum refining industry	(T)	
K052	Tank bottoms (leaded) from the petroleum refining in dustry	(T)	
K060	Ammonia still lime sludge from coking operations	(T)	
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)	
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332)	(C,T)	
K064	Acid plant blowdown slurry/sludge resulting from (T)the thickening of blowdown slurry from primary copper production		
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities	(T)	
K066	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	(T)	
K069	Emission control dust/sludge from secondary lead smelting.	(T)	
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	(T)	
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)	
K083	Distillation bottoms from aniline production	(T)	
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)	

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)	
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers,soaps, and stabilizers containing chromium and lead	(T)	
K087	Decanter tank tar sludge from coking operations	(T)	
K088	Spent potliners from primary aluminum reduction	(T)	
K090	Emission control dust or sludge from ferrochromiumsilicon production	(T)	
K091	Emission control dust or sludge from ferrochromium production	(T)	
K093	Distillation light ends from the production ofphthalic anhydride from ortho-xylene	(T)	
K094	Distillation bottoms from the production ofphthalic anhydride from ortho-xylene	(T)	
K095	Distillation bottoms from the production of1,1,1-trichloroethane	(T)	
K096	Heavy ends from the heavy ends column from theproduction of 1,1,1-trichloroethane	(T)	
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)	
K098	Untreated process wastewater from the production of toxaphene	(T)	
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)	
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)	
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)	
K103	Process residues from aniline extraction from the production of aniline	(T)	
K104	Combined wastewater streams generated from ni-trobenzene/aniline production	(T)	
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)	
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)	
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)	

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene		
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluendiamine via hydrogention of dinitrotoluene		
K114	Vicinals from the purification of toluenediamine in the production of toluendiamine via hydrogention of dinitrotoluene		
K115	Heavy ends from the purification of toluenediamine in the production of toluendiamine via hydrogention of dinitrotoluene		
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediaminepurification of toluenediamine via hydrogention of dinitrotoluene		
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide viabromination of ethene	(T)	
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)	
K123	Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt		
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts		
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts		
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts		
K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide	(C,T)	
K132	Spent absorbent and wastewater separator solids from the production of methyl bromide	(T)	
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)	
K141	Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal This listing does not include K087 (decanter tank tar sludges from coking operations)	(T)	
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products from coal	(T)	
K143	Process residues from the recovery of light oil,including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal	(T)	
K144	Wastewater sump residues from light oil refining, including, but not limited to,intercepting or contamination sump sludges from the recovery of coke by-products produced from coal	(T)	
K145	Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal	(T)	
K147	Tar storage tank residues from coal tar refining	(T)	
K148	Residues from coal tar distillation, including but not limited to, still bottoms	(T)	
K149	Distillation bottoms from the production of alpha-(or methyl-)		

Waste Code	Waste Description	Hazard Code	CAS No.
	chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups, (This waste does not include still bottoms from the distillation of benzyl chloride)	(T)	
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha-(or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups	(T)	
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha-(or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups	(T)	
K156	Organic wastes (including heavy ends, still bottoms, light ends, spent solvents, filtrates and decantes) from the production of carbamates and carbamoyl oximes.	(T)	
K157	Wastewaters (including scrubber waters, condenser waters, washwaters and separation waters) from the production of carbamates and carbamoyl oximes.	(T)	
K158	Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes.	(T)	
K159	Organics from treatment of thiocarbamate wastes	(T)	
K160	Solids (including filter wastes, separation solids and spent catalysts) from the production of thiocarbamates and solids from the treatment of thiocarbamate wastes.	(T)	
K161	Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust and floor sweepings from the production of dithiocarbamate acids and their salts.(This listing does not include K125 or K126.).		
K169	Crude oil storage tank sediment from petroleum refining operations.	(T)	
K170	Clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations.	(T)	
K171	Spent Hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(I,T)	
K172	Spent Hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(I,T)	

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
K174	Wastewater treatment sludges from the production of ethylene dichloride or vinyl chloride monomer (including sludges that result from commingled ethylene dichloride or vinyl chloride monomer wastewater and other wastewater), unless the sludges meet the following conditions: (i) they are disposed of in a subtitle C or non-hazardous landfill licensed or permitted by the state or federal government ; (ii) they are not otherwise placed on the land prior to final disposal; and (iii) the generator maintains documentation demonstrating that the waste was either disposed of in an on-site landfill or consigned to a transporter ot disposal facility that provided written commitment to dispose of the waste in an off-site landfill. Respondents in any action brought to enforce the requirements of subtitle C must, upon a showing by the government that the respondent managaed wastewater treatment sludges from the production of vinyl chloride monomer or ethylene dichloride, demonstrate tht they meet the terms of the exclusion set forth above. In doing so, they must provide appropriate documentation (cont	(T)	
K175	Wastewater treatment sludges from the production of vinyl chloride monomer using mercuric chloride catalyst in an acetylene-based process.	(T)	
K176	Baghouse filters from the production of antimony oxide, including filters from the production of inermediates. (e.g., antimony metal or crude antimony oxide).	(E)	
K177	Slag from the production of antimony oxide that is speculatively accumulated or disposed, including slag from the production of intermediates (e.g., antimony metal or crude antimony oxide)	(T)	
K178	Solids from manufacturing and manufacturing-site storage of ferris chloride from acids formed during the production of titanium dioxide using the chloride-ilmenite process.	(T)	
K181	Nonwastewaters from the production of certain dyes, pigments, and FD&C colorants.		
P001	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1 - phenylbutyl)-, & salts, when present at concentrations greater than 0.3%		181-81-2
P001	Warfarin, & salts, when present at concentrations greater than 0.3%		181-81-2
P002	Acetamide, N-(aminothioxomethyl)-		591-08-2
P002	1-Acetyl-2-thiourea		591-08-2
P003	Acrolein		107-02-8
P003	2-Propenal		107-02-8
P004	Aldrin		309-00-2
P004	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-		309-00-2
P005	Allyl alcohol		107-18-6
P005	2-Propen-1-ol		107-18-6
P006	Aluminum phosphide (R,T)		20859-73-8
P007	5-(Aminomethyl)-3-isoxazolol		2763-96-4
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-		2763-96-4
P008	4-Aminopyridine		504-24-5
P008	4-Pyridinamine		504-24-5
P009	Ammonium picrate (R)		131-74-8

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P009	Phenol, 2,4,6-trinitro-, ammonium salt (R)		131-74-8
P010	Arsenic acid H3AsO4		7778-39-4
P011	Arsenic oxide As2O5		1303-28-2
P011	Arsenic pentoxide		1303-28-2
P012	Arsenic oxide As2O3		1327-53-3
P012	Arsenic trioxide		1327-53-3
P013	Barium cyanide		542-62-1
P014	Benzenethiol		108-98-5
P014	Thiophenol		108-98-5
P015	Beryllium powder		7440-41-7
P016	Dichloromethyl ether		542-88-1
P016	Methane, oxybis[chloro-		542-88-1
P017	Bromoacetone		598-31-2
P017	2-Propanone, 1-bromo-		598-31-2
P018	Brucine		357-57-3
P018	Strychnidin-10-one, 2,3-dimethoxy-		357-57-3
P020	Dinoseb		88-85-7
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro-		88-85-7
P021	Calcium cyanide		592-01-8
P021	Calcium cyanide Ca(CN)2		592-01-8
P022	Carbon disulfide		75-15-0
P023	Acetaldehyde, chloro-		107-20-0
P023	Chloroacetaldehyde		107-20-0
P024	Benzenamine, 4-chloro-		106-47-8
P024	p-Chloroaniline		106-47-8
P026	1-(o-Chlorophenyl)thiourea		5344-82-1
P026	Thiourea, (2-chlorophenyl)-		5344-82-1
P027	3-Chloropropionitrile		542-76-7
P027	Propanenitrile, 3-chloro-		542-76-7
P028	Benzene, (chloromethyl)-		100-44-7
P028	Benzyl chloride		100-44-7
P029	Copper cyanide		544-92-3
P029	Copper cyanide Cu(CN)		544-92-3
P030	Cyanides (soluble cyanide salts), not otherwise specified		....
P031	Cyanogen		460-19-5
P031	Ethanedinitrile		460-19-5
P033	Cyanogen chloride		506-77-4
P033	Cyanogen chloride (CN)Cl		506-77-4
P034	2-Cyclohexyl-4,6-dinitrophenol		131-89-5
P034	Phenol, 2-cyclohexyl-4,6-dinitro-		131-89-5
P036	Arsonous dichloride, phenyl-		696-28-6
P036	Dichlorophenylarsine		696-28-6
P037	Dieldrin		60-57-1
P037	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-		60-57-1
P038	Arsine, diethyl-		692-42-2
P038	Diethylarsine		692-42-2
P039	Disulfoton		298-04-4
P039	Phosphorodithioic acid, O,O-diethyl.S-[2-(ethylthio)ethyl] ester		298-04-4

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
P040	O,O-Diethyl O-pyrazinyl phosphorothioate		297-97-2
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester		297-97-2
P041	Diethyl-p-nitrophenyl phosphate		311-45-5
P041	Phosphoric acid, diethyl 4-nitrophenyl ester		311-45-5
P042	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-		51-43-4
P042	Epinephrine		51-43-4
P043	Diisopropylfluorophosphate (DFP)		55-91-4
P043	Phosphorofluoridic acid, bis(1-methylethyl) ester		55-91-4
P044	Dimethoate		60-51-5
P044	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester		60-51-5
P045	2-Butanone, 3,3-dimethyl-1-(methylthio)-, ...O-[methylamino)carbonyl] oxime		39196-18-4
P045	Thiofanox		39196-18-4
P046	Benzeneethanamine, alpha,alpha-dimethyl-		122-09-8
P046	alpha,alpha-Dimethylphenethylamine		122-09-8
P047	4,6-Dinitro-o-cresol, & salts 1		1534-52-
P047	Phenol, 2-methyl-4,6-dinitro-, & salts, 1		1534-52-
P048	2,4-Dinitrophenol		51-28-5
P048	Phenol, 2,4-dinitro-		51-28-5
P049	Dithiobiuret		541-53-7
P049	Thioimidodicarbonic diamide [(H2N)C(S)]2NH		541-53-7
P050	Endosulfan		115-29-7
P050	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide		115-29-7
P051	2,7:3,6-Dimethanonaphth [2,3-b]oxirene,3,4,5,6,9,9-hexa-chloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-, & metabolites		172-20-8
P051	Endrin		72-20-8
P051	Endrin, & metabolites		72-20-8
P054	Aziridine		151-56-4
P054	Ethyleneimine		151-56-4
P056	Fluorine		7782-41-4
P057	Acetamide, 2-fluoro-		640-19-7
P057	Fluoroacetamide		640-19-7
P058	Acetic acid, fluoro-, sodium salt		62-74-8
P058	Fluoroacetic acid, sodium salt		62-74-8
P059	Heptachlor		76-44-8
P059	4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-		76-44-8
P060	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-		465-73-6
P060	Isodrin		465-73-6
P062	Hexaethyl tetraphosphate		757-58-4
P062	Tetraphosphoric acid, hexaethyl ester		757-58-4
P063	Hydrocyanic acid		74-90-8
P063	Hydrogen cyanide		74-90-8
P064	Methane, isocyanato-		624-83-9
P064	Methyl isocyanate		624-83-9
P065	Fulminic acid, mercury(2+) salt (R,T)		628-86-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P065	Mercury fulminate (R,T)		628-86-4
P066	Ethanimidothioic acid,...N-[[(methylamino)carbonyl]oxy]-, methyl ester		16752-77-5
P066	Methomyl		16752-77-5
P067	Aziridine, 2-methyl-		75-55-8
P067	1,2-Propylenimine		75-55-8
P068	Hydrazine, methyl-		60-34-4
P068	Methyl hydrazine		60-34-4
P069	2-Methyllactonitrile		75-86-5
P069	Propanenitrile, 2-hydroxy-2-methyl-		75-86-5
P070	Aldicarb		116-06-3
P070	Propanal, 2-methyl-2-(methylthio)-,...O-[(methylamino)carbonyl]oxime		116-06-3
P071	Methyl parathion		298-00-0
P071	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester		298-00-0
P072	alpha-Naphthylthiourea		86-88-4
P072	Thiourea, 1-naphthalenyl-		86-88-4
P073	Nickel carbonyl		13463-39-3
P073	Nickel carbonyl Ni(CO)4, (T-4)-		13463-39-3
P074	Nickel cyanide		557-19-7
P074	Nickel cynaide Ni(CN)2		557-19-7
P075	Nicotine, & salts		154-11-5
P075	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts		154-11-5
P076	Nitric oxide		10102-43-9
P076	Nitrogen oxide NO		10102-43-9
P077	Benzenamine, 4-nitro-		100-01-6
P077	p-Nitroaniline		100-01-6
P078	Nitrogen dioxide		10102-44-0
P078	Nitrogen oxide NO2		10102-44-0
P081	Nitroglycerine (R)		55-63-0
P081	1,2,3-Propanetriol, trinitrate (R)		55-63-0
P082	Methanamine, N-methyl-N-nitroso-		62-75-9
P082	N-Nitrosodimethylamine		62-75-9
P084	N-Nitrosomethylvinylamine		4549-40-0
P084	Vinylamine, N-methyl-N-nitroso-		4549-40-0
P085	Diphosphoramide, octamethyl-		152-16-9
P085	Octamethylpyrophosphoramide		152-16-9
P087	Osmium oxide OsO4, (T-4)-		20816-12-0
P087	Osmium tetroxide		20816-12-0
P088	Endothall		145-73-3
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid		145-73-3
P089	Parathion		56-38-2
P089	Phosphorothioic acid, O,O-diethyl, O-(4-nitrophenyl) ester		56-38-2
P092	Mercury, (acetato-O)phenyl-		62-38-4
P092	Phenylmercury acetate		62-38-4
P093	Phenylthiourea		103-85-5
P093	Thiourea, phenyl-		103-85-5
P094	Phorate		298-02-2
P094	Phosphorodithioic acid, O,O-diethyl.S-[(ethylthio)methyl] ester		298-02-2
P095	Carbonic dichloride		75-44-5
P095	Phosgene		75-44-5

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
P096	Hydrogen phosphide		7803-51-2
P096	Phosphine		7803-51-2
P097	Famphur		52-85-7
P097	Phosphorothioic acid,...O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester		52-85-7
P098	Potassium cyanide		151-50-8
P098	Potassium cyanide K(CN)		151-50-8
P099	Argentate(1-), bis(cyano-C)-, potassium		506-61-6
P099	Potassium silver cyanide		506-61-6
P101	Ethyl cyanide		107-12-0
P101	Propanenitrile		107-12-0
P102	Propargyl alcohol		107-19-7
P102	2-Propyn-1-ol		107-19-7
P103	Selenourea		630-10-4
P104	Silver cyanide		506-64-9
P104	Silver cyanide Ag(CN)		506-64-9
P105	Sodium azide		26628-22-8
P106	Sodium cyanide		143-33-9
P106	Sodium cyanide Na(CN)		143-33-9
P108	Strychnidin-10-one, & salts		157-24-9
P108	Strychnine, & salts		157-24-9
P109	Tetraethyldithiopyrophosphate		3689-24-5
P109	Thiodiphosphoric acid, tetraethyl ester		3689-24-5
P110	Plumbane, tetraethyl-		78-00-2
P110	Tetraethyl lead		78-00-2
P111	Diphosphoric acid, tetraethyl ester		107-49-3
P111	Tetraethyl pyrophosphate		107-49-3
P112	Methane, tetranitro-(R)		509-14-8
P112	Tetranitromethane (R)		509-14-8
P113	Thallic oxide		1314-32-5
P113	Thallium oxide Tl2O3		1314-32-5
P114	Selenious acid, dithallium(1+) salt		12039-52-0
P114	Thallium(I) selenite		12039-52-0
P115	Sulfuric acid, dithallium(1+) salt		7446-18-6
P115	Thallium(I) sulfate		7446-18-6
P116	Hydrazinecarbothioamide		79-19-6
P116	Thiosemicarbazide		79-19-6
P118	Methanethiol, trichloro-		75-70-7
P118	Trichloromethanethiol		75-70-7
P119	Ammonium vanadate		7803-55-6
P119	Vanadic acid, ammonium salt		7803-55-6
P120	Vanadium oxide V2O5		1314-62-1
P120	Vanadium pentoxide		1314-62-1
P121	Zinc cyanide		557-21-1
P121	Zinc cyanide Zn(CN)2		557-21-1
P122	Zinc phosphide Zn3P2, when present at concentrations greater than 10% (R,T)		1314-84-7
P123	Toxaphene		8001-35-2
P127	7-Benzofuranol, 2,3-dihydro-2,2-dimethylmethylcarbamate.		1563-66-2
P127	Carbofuran.		1563-66-2

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P128	Mexacarbamate		315-18-4
P128	Phenol, 4-(dimethylamino)-3,5-dimethyl-,methylcarbamate(ester).		315-18-4
P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-,O- [(methylamino)-carbonyl]oxime.		26419-73-8
P185	Tirpate.		26419-73-8
P188	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1).		57-64-7
P188	Physostigmine salicylate.		57-64-7
P188	Physostigmine salicylate.		57-64-7
P189	Carbamic acid, [(dibutylamino)-thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester.		55285-14-8
P189	Carbosulfan.		55285-14-8
P190	Carbamic acid, methyl-, 3-methylphenyl ester.		1129-41-5
P190	Metolcarb.		1129-41-5
P191	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester.		644-64-4
P191	Dimetilan.		644-64-4
P192	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester.		119-38-0
P192	Isolan.		119-38-0
P194	Ethanimidothioc acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester.		23135-22-0
P194	Oxamyl.		23135-22-0
P196	Manganese, bis(dimethylcarbamodithioato-S,S')-,		15339-36-3
P196	Manganese dimethyldithiocarbamate.		15339-36-3
P197	Formparanate.		17702-57-7
P197	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[(methyl-amino)carbonyl]o xy]phenyl]-		17702-57-7
P198	Formetanate hydrochloride.		23422-53-9
P198	Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)-carbonyl]oxy] phenyl]-, monohydrochloride.		23422-53-9
P199	Methiocarb.		2032-65-7
P199	Phenol, (3,5-dimethyl-4-(methylthio)-,methylcarbamate		2032-65-7
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate.		2631-37-0
P201	Promecarb		2631-37-0
P202	m-Cumenyl methylcarbamate.		64-00-6
P202	3-Isopropylphenyl N-methylcarbamate.		64-00-6
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate.		64-00-6
P203	Aldicarb sulfone.		1646-88-4
P203	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime.		1646-88-4
P204	Physostigmine.		57-47-6
P204	Physostigmine.		57-47-6
P204	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-,methylcarbamate (ester), (3aS-cis)-.		57-47-6
P205	Zinc, bis(dimethylcarbamodithioato-S,S')-,		137-30-4
P205	Ziram.		137-30-4
U001	Acetaldehyde (I)		75-07-0
U001	Ethanal (I)		75-07-0

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U002	Acetone (I)		67-64-1
U002	2-Propanone (I)		67-64-1
U003	Acetonitrile (I,T)		75-05-8
U004	Acetophenone		98-86-2
U004	Ethanone, 1-phenyl-		98-86-2
U005	Acetamide, N-9H-fluoren-2-yl-		53-96-3
U005	2-Acetylaminofluorene		53-96-3
U006	Acetyl chloride (C,R,T)		75-36-5
U007	Acrylamide		79-06-1
U007	2-Propenamide		79-06-1
U008	Acrylic acid (I)		79-10-7
U008	2-Propenoic acid (I)		79-10-7
U009	Acrylonitrile		107-13-1
U009	2-Propenenitrile		107-13-1
U010	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-		50-07-7
U010	Mitomycin C		50-07-7
U011	Amitrole		61-82-5
U011	1H-1,2,4-Triazol-3-amine		61-82-5
U012	Aniline (I,T)		62-53-3
U012	Benzenamine (I,T)		62-53-3
U014	Auramine		492-80-8
U014	Benzenamine, 4,4'-carbonimidoylbis [N,N-dimethyl-		492-80-8
U015	Azaserine		115-02-6
U015	L-Serine, diazoacetate (ester)		115-02-6
U016	Benz[c]acridine		225-51-4
U017	Benzal chloride		98-87-3
U017	Benzene, (dichloromethyl)-		98-87-3
U018	Benz[a]anthracene		56-55-3
U019	Benzene (I,T)		71-43-2
U020	Benzenesulfonic acid chloride (C,R)		98-09-9
U020	Benzenesulfonyl chloride (C,R)		98-09-9
U021	Benzidine		92-87-5
U021	[1,1'-Biphenyl]-4,4'-diamine		92-87-5
U022	Benzo[a]pyrene		50-32-8
U023	Benzene, (trichloromethyl)-		98-07-7
U023	Benzotrichloride (C,R,T)		98-07-7
U024	Dichloromethoxy ethane		111-91-1
U024	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-		111-91-1
U025	Dichloroethyl ether		111-44-4
U025	Ethane, 1,1'-oxybis[2-chloro-		111-44-4
U026	Chlornaphazin		494-03-1
U026	Naphthalenamine, N,N'-bis(2-chloroethyl)-		494-03-1
U027	Dichloroisopropyl ether		108-60-1
U027	Propane, 2,2'-oxybis[2-chloro-		108-60-1
U028	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester		117-81-7
U028	Diethylhexyl phthalate		117-81-7
U029	Methane, bromo-		74-83-9
U029	Methyl bromide		74-83-9

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U030	Benzene, 1-bromo-4-phenoxy-		101-55-3
U030	4-Bromophenyl phenyl ether		101-55-3
U031	1-Butanol (I)		71-36-3
U031	n-Butyl alcohol (I)		71-36-3
U032	Calcium chromate		13765-19-0
U032	Chromic acid H2CrO4, calcium salt		13765-19-0
U033	Carbonic difluoride		353-50-4
U033	Carbon oxyfluoride (R,T)		353-50-4
U034	Acetaldehyde, trichloro-		75-87-6
U034	Chloral		75-87-6
U035	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-		305-03-3
U035	Chlorambucil		305-03-3
U036	Chlordane, alpha & gamma isomers		57-74-9
U036	4,7-Methano-1H-indene,1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-		57-74-9
U037	Benzene, chloro-		108-90-7
U037	Chlorobenzene		108-90-7
U038	Benzeneacetic acid,4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester		510-15-6
U038	Chlorobenzilate		510-15-6
U039	p-Chloro-m-cresol		59-50-7
U039	Phenol, 4-chloro-3-methyl-		59-50-7
U041	Epichlorohydrin		106-89-8
U041	Oxirane, (chloromethyl)-		106-89-8
U042	2-Chloroethyl vinyl ether		110-75-8
U042	Ethene, (2-chloroethoxy)-		110-75-8
U043	Ethene, chloro-		75-01-4
U043	Vinyl chloride		75-01-4
U044	Chloroform		67-66-3
U044	Methane, trichloro-		67-66-3
U045	Methane, chloro-(I, T)		74-87-3
U045	Methyl chloride (I,T)		74-87-3
U046	Chloromethyl methyl ether		107-30-2
U046	Methane, chloromethoxy-		107-30-2
U047	beta-Chloronaphthalene		91-58-7
U047	Naphthalene, 2-chloro-		91-58-7
U048	o-Chlorophenol		95-57-8
U048	Phenol, 2-chloro-		95-57-8
U049	Benzenamine, 4-chloro-2-methyl-, hydrochloride		3165-93-3
U049	4-Chloro-o-toluidine, hydrochloride		3165-93-3
U050	Chrysene		218-01-9
U051	Creosote		....
U052	Cresol (Cresylic acid)		1319-77-3
U052	Phenol, methyl-		1319-77-3
U053	2-Butenal		4170-30-3
U053	Crotonaldehyde		4170-30-3
U055	Benzene, (1-methylethyl)-(I)		98-82-8
U055	Cumene (I)		98-82-8
U056	Benzene, hexahydro-(I)		110-82-7
U056	Cyclohexane (I)		110-82-7

Waste Code	Waste Description	Hazard Code	CAS No.
U057	Cyclohexanone (I)		108-94-1
U058	Cyclophosphamide		50-18-0
U058	2H-1,3,2-Oxazaphosphorin-2-amine,...N,N-bis(2-chloroethyl)te trahydro-, 2-oxide		50-18-0
U059	Daunomycin		20830-81-3
U059	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6 ,8,11-trihydroxy-1-methoxy-, (8S-cis)-		20830-81-3
U060	Benzene, 1,1'-(2,2-dichloroethylidene)bis [4-chloro-		72-54-8
U060	DDD		72-54-8
U061	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-chloro-		50-29-3
U061	DDT		50-29-3
U062	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester		2303-16-4
U062	Diallate		2303-16-4
U063	Dibenz[a,h]anthracene		53-70-3
U064	Benzo[rst]pentaphene		189-55-9
U064	Dibenzo[a,i]pyrene		189-55-9
U066	1,2-Dibromo-3-chloropropane		96-12-8
U066	Propane, 1,2-dibromo-3-chloro-		96-12-8
U067	Ethane, 1,2-dibromo-		106-93-4
U067	Ethylene dibromide		106-93-4
U068	Methane, dibromo-		74-95-3
U068	Methylene bromide		74-95-3
U069	1,2-Benzenedicarboxylic acid, dibutyl ester		84-74-2
U069	Dibutyl phthalate		84-74-2
U070	Benzene, 1,2-dichloro-		95-50-1
U070	o-Dichlorobenzene		95-50-1
U071	Benzene, 1,3-dichloro-		541-73-1
U071	m-Dichlorobenzene		541-73-1
U072	Benzene, 1,4-dichloro-		106-46-7
U072	p-Dichlorobenzene		106-46-7
U073	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-		91-94-1
U073	3,3'-Dichlorobenzidine		91-94-1
U074	2-Butene, 1,4-dichloro-(I,T)		764-41-0
U074	1,4-Dichloro-2-butene (I,T)		764-41-0
U075	Dichlorodifluoromethane		75-71-8
U075	Methane, dichlorodifluoro-		75-71-8
U076	Ethane, 1,1-dichloro-		75-34-3
U076	Ethylidene dichloride		75-34-3
U077	Ethane, 1,2-dichloro-		107-06-2
U077	Ethylene dichloride		107-06-2
U078	1,1-Dichloroethylene		75-35-4
U078	Ethene, 1,1-dichloro-		75-35-4
U079	1,2-Dichloroethylene		156-60-5
U079	Ethene, 1,2-dichloro-, (E)-		156-60-5
U080	Methane, dichloro-		75-09-2
U080	Methylene chloride		75-09-2
U081	2,4-Dichlorophenol		120-83-2
U081	Phenol, 2,4-dichloro-		120-83-2

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U082	2,6-Dichlorophenol		87-65-0
U082	Phenol, 2,6-dichloro-		87-65-0
U083	Propane, 1,2-dichloro-		78-87-5
U083	Propylene dichloride		78-87-5
U084	1,3-Dichloropropene		542-75-6
U084	1-Propene, 1,3-dichloro-		542-75-6
U085	2,2'-Bioxirane		1464-53-5
U085	1,2:3,4-Diepoxybutane (I,T)		1464-53-5
U086	N,N'-Diethylhydrazine		1615-80-1
U086	Hydrazine, 1,2-diethyl-		1615-80-1
U087	O,O-Diethyl S-methyl dithiophosphate		3288-58-2
U087	Phosphorodithioic acid, O,O-diethyl S-methyl ester		3288-58-2
U088	1,2-Benzenedicarboxylic acid, diethyl ester		84-66-2
U088	Diethyl phthalate		84-66-2
U089	Diethylstilbesterol		56-53-1
U089	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-		56-53-1
U090	1,3-Benzodioxole, 5-propyl-		94-58-6
U090	Dihydrosafrole		94-58-6
U091	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-		119-90-4
U091	3,3'-Dimethoxybenzidine		119-90-4
U092	Dimethylamine (I)		124-40-3
U092	Methanamine, N-methyl-(I)		124-40-3
U093	Benzenamine, N,N-dimethyl-4-(phenylazo)-		60-11-7
U093	p-Dimethylaminoazobenzene		60-11-7
U094	Benz[a]anthracene, 7,12-dimethyl-		57-97-6
U094	7,12-Dimethylbenz[a]anthracene		57-97-6
U095	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-		119-93-7
U095	3,3'-Dimethylbenzidine		119-93-7
U096	alpha,alpha-Dimethylbenzylhydroperoxide (R)		80-15-9
U096	Hydroperoxide, 1-methyl-1-phenylethyl-(R)		80-15-9
U097	Carbamic chloride, dimethyl-		79-44-7
U097	Dimethylcarbamoyl chloride		79-44-7
U098	1,1-Dimethylhydrazine		57-14-7
U098	Hydrazine, 1,1-dimethyl-		57-14-7
U099	1,2-Dimethylhydrazine		540-73-8
U099	Hydrazine, 1,2-dimethyl-		540-73-8
U101	2,4-Dimethylphenol		105-67-9
U101	Phenol, 2,4-dimethyl-		105-67-9
U102	1,2-Benzenedicarboxylic acid, dimethyl ester		131-11-3
U102	Dimethyl phthalate		131-11-3
U103	Dimethyl sulfate		77-78-1
U103	Sulfuric acid, dimethyl ester		77-78-1
U105	Benzene, 1-methyl-2,4-dinitro-		121-14-2
U105	2,4-Dinitrotoluene		121-14-2
U106	Benzene, 2-methyl-1,3-dinitro-		606-20-2
U106	2,6-Dinitrotoluene		606-20-2
U107	1,2-Benzenedicarboxylic acid, dioctyl ester		117-84-0
U107	Di-n-octyl phthalate		117-84-0
U108	1,4-Diethyleneoxide		123-91-1
U108	1,4-Dioxane		123-91-1

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U109	1,2-Diphenylhydrazine		122-66-7
U109	Hydrazine, 1,2-diphenyl-		122-66-7
U110	Dipropylamine (I)		142-84-7
U110	1-Propanamine, N-propyl-(I)		142-84-7
U111	Di-n-propylnitrosamine		621-64-7
U111	1-Propanamine, N-nitroso-N-propyl-		621-64-7
U112	Acetic acid ethyl ester (I)		141-78-6
U112	Ethyl acetate (I)		141-78-6
U113	Ethyl acrylate (I)		140-88-5
U113	2-Propenoic acid, ethyl ester (I)		140-88-5
U114	Carbamodithioic acid, 1,2-ethanediylbis-,...salts & esters		1111-54-6
U114	Ethylenebisdithiocarbamic acid, salts & esters		1111-54-6
U115	Ethylene oxide (I,T)		75-21-8
U115	Oxirane (I,T)		75-21-8
U116	Ethylenethiourea		96-45-7
U116	2-Imidazolidinethione		96-45-7
U117	Ethane, 1,1'-oxybis-(I)		60-29-7
U117	Ethyl ether (I)		60-29-7
U118	Ethyl methacrylate		97-63-2
U118	2-Propenoic acid, 2-methyl-, ethyl ester		97-63-2
U119	Ethyl methanesulfonate		62-50-0
U119	Methanesulfonic acid, ethyl ester		62-50-0
U120	Fluoranthene		206-44-0
U121	Methane, trichlorofluoro-		75-69-4
U121	Trichloromonofluoromethane		75-69-4
U122	Formaldehyde		50-00-0
U123	Formic acid (C,T)		64-18-6
U124	Furan (I)		110-00-9
U124	Furfuran (I)		110-00-9
U125	2-Furancarboxaldehyde (I)		98-01-1
U125	Furfural (I)		98-01-1
U126	Glycidylaldehyde		765-34-4
U126	Oxiranecarboxyaldehyde		765-34-4
U127	Benzene, hexachloro-		118-74-1
U127	Hexachlorobenzene		118-74-1
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-		87-68-3
U128	Hexachlorobutadiene		87-68-3
U129	Cyclohexane, 1,2,3,4,5,6-hexachloro- ,,(1alpha,2alpha,3beta,4alpha,5alpha,6beta)-		58-89-9
U129	Lindane		58-89-9
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-		77-47-4
U130	Hexachlorocyclopentadiene		77-47-4
U131	Ethane, hexachloro-		67-72-1
U131	Hexachloroethane		67-72-1
U132	Hexachlorophene		70-30-4
U132	Phenol, 2,2'-methylenebis[3,4,6-trichloro-		70-30-4
U133	Hydrazine (R,T)		302-01-2
U134	Hydrofluoric acid (C,T)		7664-39-3
U134	Hydrogen fluoride (C,T)		7664-39-3
U135	Hydrogen sulfide		7783-06-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U135	Hydrogen sulfide H2S		7783-06-4
U136	Arsinic acid, dimethyl-		75-60-5
U136	Cacodylic acid		75-60-5
U137	Indeno[1,2,3-cd]pyrene		193-39-5
U138	Methane, iodo-		74-88-4
U138	Methyl iodide		74-88-4
U140	Isobutyl alcohol (I,T)		78-83-1
U140	1-Propanol, 2-methyl-(I,T)		78-83-1
U141	1,3-Benzodioxole, 5-(1-propenyl)-		120-58-1
U141	Isosafrole		120-58-1
U142	Kepone		143-50-0
U142	1,3,4-Metheno-2H-cyclobuta [cd]pentalen-2-one, 1, 1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-		143-50-0
U143	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-t etrahydro-1H-pyrrolizin-1-ylester,...[1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-		303-34-4
U143	Lasiocarpine		303-34-4
U144	Acetic acid, lead(2+) salt		301-04-2
U144	Lead acetate		301-04-2
U145	Lead phosphate		7446-27-7
U145	Phosphoric acid, lead(2+) salt (2:3)		7446-27-7
U146	Lead, bis(acetato-O)tetrahydroxytri-		1335-32-6
U146	Lead subacetate		1335-32-6
U147	2,5-Furandione		108-31-6
U147	Maleic anhydride		108-31-6
U148	Maleic hydrazide		123-33-1
U148	3,6-Pyridazinedione, 1,2-dihydro-		123-33-1
U149	Malononitrile		109-77-3
U149	Propanedinitrile		109-77-3
U150	Melphalan		148-82-3
U150	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-		148-82-3
U151	Mercury		7439-97-6
U152	Methacrylonitrile (I, T)		126-98-7
U152	2-Propenenitrile, 2-methyl-(I,T)		126-98-7
U153	Methanethiol (I, T)		74-93-1
U153	Thiomethanol (I,T)		74-93-1
U154	Methanol (I)		67-56-1
U154	Methyl alcohol (I)		67-56-1
U155	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-		91-80-5
U155	Methapyrilene		91-80-5
U156	Carbonochloridic acid, methyl ester (I,T)		79-22-1
U156	Methyl chlorocarbonate (I,T)		79-22-1
U157	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-		56-49-5
U157	3-Methylcholanthrene		56-49-5
U158	Benzenamine, 4,4'-methylenebis[2-chloro-		101-14-4
U158	4,4'-Methylenebis(2-chloroaniline)		101-14-4
U159	2-Butanone (I,T)		78-93-3
U159	Methyl ethyl ketone (MEK) (I,T)		78-93-3
U160	2-Butanone, peroxide (R,T)		1338-23-4
U160	Methyl ethyl ketone peroxide (R,T)		1338-23-4

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U161	Methyl isobutyl ketone (I)		108-10-1
U161	4-Methyl-2-pentanone (I)		108-10-1
U161	Pentanol, 4-methyl-		108-10-1
U162	Methyl methacrylate (I,T)		80-62-6
U162	2-Propenoic acid, 2-methyl-, methyl ester (I,T)		80-62-6
U163	Guanidine, N-methyl-N'-nitro-N-nitroso-		70-25-7
U163	MNNG		70-25-7
U164	Methylthiouracil		56-04-2
U164	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-		56-04-2
U165	Naphthalene		91-20-3
U166	1,4-Naphthalenedione		130-15-4
U166	1,4-Naphthoquinone		130-15-4
U167	1-Naphthalenamine		134-32-7
U167	alpha-Naphthylamine		134-32-7
U168	2-Naphthalenamine		91-59-8
U168	beta-Naphthylamine		91-59-8
U169	Benzene, nitro-		98-95-3
U169	Nitrobenzene (I,T)		98-95-3
U170	p-Nitrophenol		100-02-7
U170	Phenol, 4-nitro-		100-02-7
U171	2-Nitropropane (I,T)		79-46-9
U171	Propane, 2-nitro-(I,T)		79-46-9
U172	1-Butanamine, N-butyl-N-nitroso-		924-16-3
U172	N-Nitrosodi-n-butylamine		924-16-3
U173	Ethanol, 2,2'-(nitrosoimino)bis-		1116-54-7
U173	N-Nitrosodiethanolamine		1116-54-7
U174	Ethanamine, N-ethyl-N-nitroso-		55-18-5
U174	N-Nitrosodiethylamine		55-18-5
U176	N-Nitroso-N-ethylurea		759-73-9
U176	Urea, N-ethyl-N-nitroso-		759-73-9
U177	N-Nitroso-N-methylurea		684-93-5
U177	Urea, N-methyl-N-nitroso-		684-93-5
U178	Carbamic acid, methylnitroso-, ethyl ester		615-53-2
U178	N-Nitroso-N-methylurethane		615-53-2
U179	N-Nitrosopiperidine		100-75-4
U179	Piperidine, 1-nitroso-		100-75-4
U180	N-Nitrosopyrrolidine		930-55-2
U180	Pyrrolidine, 1-nitroso-		930-55-2
U181	Benzenamine, 2-methyl-5-nitro-		99-55-8
U181	5-Nitro-o-toluidine		99-55-8
U182	Paraldehyde		123-63-7
U182	1,3,5-Trioxane, 2,4,6-trimethyl-		123-63-7
U183	Benzene, pentachloro-		608-93-5
U183	Pentachlorobenzene		608-93-5
U184	Ethane, pentachloro-		76-01-7
U184	Pentachloroethane		76-01-7
U185	Benzene, pentachloronitro-		82-68-8
U185	Pentachloronitrobenzene (PCNB)		82-68-8
U186	1-Methylbutadiene (I)		504-60-9
U186	1,3-Pentadiene (I)		504-60-9

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U187	Acetamide, N-(4-ethoxyphenyl)-		62-44-2
U187	Phenacetin		62-44-2
U188	Phenol		108-95-2
U189	Phosphorus sulfide (R)		1314-80-3
U189	Sulfur phosphide (R)		1314-80-3
U190	1,3-Isobenzofurandione		85-44-9
U190	Phthalic anhydride		85-44-9
U191	2-Picoline		109-06-8
U191	Pyridine, 2-methyl-		109-06-8
U192	Benzamide,3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-		23950-58-5
U192	Pronamide		23950-58-5
U193	1,2-Oxathiolane, 2,2-dioxide		1120-71-4
U193	1,3-Propane sultone		1120-71-4
U194	1-Propanamine (I,T)		107-10-8
U194	n-Propylamine (I,T)		107-10-8
U196	Pyridine		110-86-1
U197	p-Benzoquinone		106-51-4
U197	2,5-Cyclohexadiene-1,4-dione		106-51-4
U200	Reserpine		50-55-5
U200	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-		50-55-5
U201	1,3-Benzenediol		108-46-3
U201	Resorcinol		108-46-3
U202	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts		181-07-2
U202	Saccharin, & salts		181-07-2
U203	1,3-Benzodioxole, 5-(2-propenyl)-		94-59-7
U203	Safrole		94-59-7
U204	Selenious acid		7783-00-8
U204	Selenium dioxide		7783-00-8
U205	Selenium sulfide		7488-56-4
U205	Selenium sulfide SeS2 (R,T)		7488-56-4
U206	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-,D-		18883-66-4
U206	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-.carbonyl]amino]-		18883-66-4
U206	Streptozotocin		18883-66-4
U207	Benzene, 1,2,4,5-tetrachloro-		95-94-3
U207	1,2,4,5-Tetrachlorobenzene		95-94-3
U208	Ethane, 1,1,1,2-tetrachloro-		630-20-6
U208	1,1,1,2-Tetrachloroethane		630-20-6
U209	Ethane, 1,1,2,2-tetrachloro-		79-34-5
U209	1,1,2,2-Tetrachloroethane		79-34-5
U210	Ethene, tetrachloro-		127-18-4
U210	Tetrachloroethylene		127-18-4
U211	Carbon tetrachloride		56-23-5
U211	Methane, tetrachloro-		56-23-5
U213	Furan, tetrahydro-(I)		109-99-9
U213	Tetrahydrofuran (I)		109-99-9
U214	Acetic acid, thallium(1+) salt		563-68-8
U214	Thallium(I) acetate		563-68-8
U215	Carbonic acid, dithallium(1+) salt		6533-73-9

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U215	Thallium(I) carbonate		6533-73-9
U216	Thallium(I) chloride		7791-12-0
U216	Thallium chloride Tlcl		7791-12-0
U217	Nitric acid, thallium(1+) salt		10102-45-1
U217	Thallium(I) nitrate		10102-45-1
U218	Ethanethioamide		62-55-5
U218	Thioacetamide		62-55-5
U219	Thiourea		62-56-6
U220	Benzene, methyl-		108-88-3
U220	Toluene		108-88-3
U221	Benzenediamine, ar-methyl-		25376-45-8
U221	Toluenediamine		25376-45-8
U222	Benzenamine, 2-methyl-, hydrochloride		636-21-5
U222	o-Toluidine hydrochloride		636-21-5
U223	Benzene, 1,3-diisocyanatomethyl-(R,T)		26471-62-5
U223	Toluene diisocyanate (R,T)		26471-62-5
U225	Bromoform		75-25-2
U225	Methane, tribromo-		75-25-2
U226	Ethane, 1,1,1-trichloro-		71-55-6
U226	Methyl chloroform		71-55-6
U227	Ethane, 1,1,2-trichloro-		79-00-5
U227	1,1,2-Trichloroethane		79-00-5
U228	Ethene, trichloro-		79-01-6
U228	Trichloroethylene		79-01-6
U234	Benzene, 1,3,5-trinitro-		99-35-4
U234	1,3,5-Trinitrobenzene (R,T)		99-35-4
U235	1-Propanol, 2,3-dibromo-, phosphate (3:1)		126-72-7
U235	Tris(2,3-dibromopropyl) phosphate		126-72-7
U236	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-...dimethyl [1,1'-biphenyl]-4,4'-diyl)bis(azo)bis [5-amino-4-hydroxy]-, tetrasodium salt		72-57-1
U236	Trypan blue		72-57-1
U237	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-		66-75-1
U237	Uracil mustard		66-75-1
U238	Carbamic acid, ethyl ester		51-79-6
U238	Ethyl carbamate (urethane)		51-79-6
U239	Benzene, dimethyl-(I,T)		1330-20-7
U239	Xylene (I)		1330-20-7
U240	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters		194-75-7
U240	2,4-D, salts & esters		194-75-7
U243	Hexachloropropene		1888-71-7
U243	1-Propene, 1,1,2,3,3,3-hexachloro-		1888-71-7
U244	Thioperoxydicarbonic diamide [(H2N)C(S)]2S2,		137-26-8
U244	Thiram		137-26-8
U246	Cyanogen bromide (CN)Br		506-68-3
U247	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-methoxy-		72-43-5
U247	Methoxychlor		72-43-5
U248	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less		181-81-2
U248	Warfarin, & salts, when present at concentrations of 0.3% or less		181-81-2

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U249	Zinc phosphide Zn3P2, when present at concentrations of 10% or less		1314-84-7
U271	Benomyl.		17804-35-2
U271	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester.		17804-35-2
U277	Carbamodithioic acid, diethyl-,2-chloro-2-propenyl ester.		95-06-7
U277	Sulfallate.		95-06-7
U278	Bendiocarb.		22781-23-3
U278	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate.		22781-23-3
U279	Carbaryl.		63-25-2
U279	1-Naphthalenol, methylcarbamate.		63-25-2
U280	Barban.		101-27-9
U280	Carbamic acid, (3-chlorophenyl)-,4-chloro-2-butynyl ester.		101-27-9
U328	Benzenamine, 2-methyl-		95-53-4
U328	o-Toluidine		95-53-4
U353	Benzenamine, 4-methyl-		106-49-0
U353	p-Toluidine		106-49-0
U359	Ethanol, 2-ethoxy-		110-80-5
U359	Ethylene glycol monoethyl ether		110-80-5
U364	Bendiocarb phenol.		22961-82-6
U364	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,		22961-82-6
U365	H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester.		2212-67-1
U365	Molinate.		2212-67-1
U366	Dazomet.		533-74-4
U366	2H-1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-		533-74-4
U367	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-		1563-38-8
U367	Carbofuran phenol.		1563-38-8
U372	Carbamic acid, 1H-benzimidazol-2-yl, methylester.		10605-21-7
U372	Carbendazim.		10605-21-7
U373	Carbamic acid, phenyl-, 1-methylethyl ester.		122-42-9
U373	Propham.		122-42-9
U375	Carbamic acid, butyl-, 3-iodo-2-propynyl ester.		55406-53-6
U375	3-Iodo-2-propynyl n-butylcarbamate.		55406-53-6
U376	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid.		144-34-3
U376	Selenium, tetrakis(dimethyldithiocarbamate).		144-34-3
U377	Carbamodithioic acid, methyl,-monopotassium salt.		137-41-7
U377	Potassium n-methyldithiocarbamate.		137-41-7
U378	Carbamodithioic acid, (hydroxymethyl)methyl-, monopotassium salt.		51026-28-9
U378	Potassium n-hydroxymethyl-n-methyldi-thiocarbamate.		51026-28-9
U379	Carbamodithioic acid, dibutyl, sodium salt.		136-30-1
U379	Sodium dibutyldithiocarbamate.		136-30-1
U381	Carbamodithioic acid, diethyl-, sodium salt.		148-18-5
U381	Sodium diethyldithiocarbamate.		148-18-5
U382	Carbamodithioic acid, dimethyl-, sodium salt.		128-04-1
U382	Sodium dimethyldithiocarbamate.		128-04-1
U383	Carbamodithioic acid, dimethyl, potassium salt.		128-03-0
U383	Potassium dimethyldithiocarbamate.		128-03-0
U384	Carbamodithioic acid, methyl-, monosodium salt.		137-42-8
U384	Metam Sodium.		137-42-8

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U385	Carbamothioic acid, dipropyl-, S-propyl ester.		1929-77-7
U385	Vernolate.		1929-77-7
U386	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester.		1134-23-2
U386	Cycloate.		1134-23-2
U386	Cycloate.		1134-23-2
U387	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester.		52888-80-9
U387	Prosulfocarb.		52888-80-9
U389	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester.		2303-17-5
U389	Triallate.		2303-17-5
U390	Carbamothioic acid, dipropyl-, S-ethyl ester.		759-94-4
U390	EPTC.		759-94-4
U391	Carbamothioic acid, butylethyl-, S-propyl ester.		1114-71-2
U391	Pebulate.		1114-71-2
U392	Butylate.		2008-41-5
U392	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester.		2008-41-5
U393	Copper, bis(dimethylcarbamodithioato-S,S')-,		137-29-1
U393	Copper dimethyldithiocarbamate.		137-29-1
U394	A2213.		30558-43-1
U394	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester.		30558-43-1
U395	Diethylene glycol, dicarbamate.		5952-26-1
U395	Ethanol, 2,2'-oxybis-, dicarbamate.		5952-26-1
U396	Ferbam.		14484-64-1
U396	Iron, tris(dimethylcarbamodithioato-S,S')-,		14484-64-1
U400	Bis(pentamethylene)thiuram tetrasulfide.		120-54-7
U400	Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-		120-54-7
U401	Bis(dimethylthiocarbamoyl) sulfide.		97-74-5
U401	Tetramethylthiuram monosulfide.		97-74-5
U402	Tetrabutylthiuram disulfide.		1634-02-2
U402	Thioperoxydicarbonic diamide, tetrabutyl.		1634-02-2
U403	Disulfiram.		97-77-8
U403	Thioperoxydicarbonic diamide, tetraethyl.		97-77-8
U404	Ethanamine, N,N-diethyl		121-44-8
U404	Triethylamine.		121-44-8
U407	Ethyl Ziram.		14324-55-1
U407	Zinc, bis(diethylcarbamodithioato-S,S')-		14324-55-1
U409	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester		23564-05-8
U409	Thiophanate-methyl.		23564-05-8
U410	Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester		59669-26-0
U410	Thiodicarb.		59669-26-0
U411	Phenol, 2-(1-methylethoxy)-, methylcarbamate.		114-26-1
U411	Propoxur.		114-26-1
	tetramethyl-		
001S	Aflatoxin		
002S	2,3,7,8-Tetrachlorodibenzo-p-dioxin		
003S	1,2,3,7,8-Pentachlorodibenzo-p-dioxin		
004S	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin		

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
005S	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin		
006S	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin		
007S	2,3,7,8-Tetrachlorodibenzo furan		
001K	Residues, including emission control sludges, from the production process and packaging of 4,4' Methylenebis (2 chloroaniline)	(T)	
002K	Wash acids generated after the effective date of these rules from the production of 3,3' - Dichlorobenzidine and still bottoms from the recovery of these acids, excluding wash acids that are recycled or any materials that are reclaimed from the wash acids and are used beneficially.	(T)	
001U	Actinomycin D		50-76-0
002U	Allyl chloride		107-05-1
003U	2-aminoanthraquinone		117-79-3
004U	Aminoazobenzene		60-09-3
005U	0-aminoazotoluene		97-56-3
006U	4-aminobiphenyl		92-67-1
007U	3-amino-9-ethyl carbazole		132-32-1
008U	1-amino-2-methyl anthraquinone		82-28-0
009U	Anilazine		101-05-3
011U	o-Anisidine		90-04-1
012U	o-Anisidine hydrochloride		134-29-2
013U	Antimony (when in the form of particles 100 microns or less)		Class-01-0
014U	Antimycin A		1397-94-0
015U	Barban		101-27-9
016U	Bendiocarb		22781-23-3
017U	Benomyl		17804-35-2
020U	Bromoxynil		1689-84-5
021U	2-(ptertButylphenoxy)isopropyl 2-chloroethyl sulfite		
022U	Captafol		191906
023U	Captan		133-06-2
024U	Carbaryl		63-25-3
025U	Carbofuran		1563-66-2
027U	Carbophenothion		786-19-6
028U	Chloramines		Class-08-6
029U	Chloropyrifos		2921-88-2
030U	Chlorinated dibenzofurans (other than those listed in Table 202)		Class-05-3
031U	Chlorinated dioxins (other than those listed in Table 202)		Class-05-4
032U	Chlorine gas		7782-50-5
033U	2-Chloroethanol		107-07-3
034U	3-(Chloromethyl) pyridine hydrochloride		6959-48-4
036U	4-chloromphenylenediamine		5131-60-2
037U	4-chloroophenylenediamine		95-83-0
038U	Chloroprene		126-99-8
040U	Clonitralid		1420-04-8
041U	Cobalt (when in the form of particles 100 microns or less)		Class-01-6
042U	Coumaphos		56-72-4
043U	pCresidine		120-71-8
044U	Crotoxyphos		7700-17-6
046U	Cycloheximide		66-81-9
047U	Demeton		

REVISED APPENDIX A

Michigan Disposal Waste Treatment Plant

MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
048U	2,4-Diaminoanisole sulfate		39156-41-7
049U	4,4'-Diaminodiphenyl ether		101-80-4
050U	2,4-Diaminotoluene		95-80-7
051U	Diazinon		333-41-5
052U	Dichlone		117-80-6
054U	Dichlorvos		62-73-7
055U	Dichrotophos		141-66-2
056U	Diethyl sulfate		64-67-5
057U	Dinocap		39300-45-3
058U	Dioxathion		78-34-2
059U	EPN		2104-64-5
061U	Ethion		563-12-2
063U	Fensulfothion		115-90-2
064U	Fenthion		55-38-9
065U	Fluchloralin		33245-39-5
068U	Hexamethyl phosphoramide		680-31-9
070U	Hydroquinone		123-31-9
071U	N-(2-Hydroxyethyl) ethyleneimine		1072-52-2
072U	Hypochlorite		14380-61-1
073U	Isonicotinic acid hydrazine		54-85-3
074U	Ketene		463-51-4
075U	Lactonitril		78-97-7
076U	Leptophos		21609-90-5
077U	Lithium and compounds		Class-02-0
078U	Malachite green		569-64-2
079U	Malathion		121-75-5
080U	Mestranol		
082U	4,4'-Methylenebis(2methylaniline)		838-88-0
083U	4,4'-Methylenebis(N,Ndimethylaniline)		101-61-1
086U	1-Methylnaphthalene		90-12-0
088U	Mevinphos		7786-34-7
089U	Mexacarbate		315-18-4
090U	Mirex		2385-85-5
092U	Monocrotophos		6923-22-4
093U	Mustard gas		505-60-2
094U	Naled		300-76-5
095U	1,5-Napthalenediamine		2243-62-1
096U	Nickel (when in the form of particles 100 microns or less)		Class-02-2
097U	Niridazole		61-57-4
098U	Nithiazide		139-94-6
099U	5-Nitroacenaphthene		602-87-9
100U	Nitrooanisidine		99-59-2
101U	4-Nitrobiphenyl		92-93-3
102U	Nitrofen		1836-75-5
103U	N-(4-(5-nitro-2-furanyl)2-thiazolyl)acetamide		531-82-8
104U	Nitrogen mustard		51-75-2
106U	p-Nitrosodiphenylamine		156-10-5
108U	N-nitroso-N-phenylhydroxylamine, ammonium salt		135-20-6
110U	Oxydemetonmethyl		301-12-2
111U	Paraquat		1910-42-5

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
112U	Peroxyacetic acid		79-21-0
113U	Phenazopyridine hydrochloride		136-40-3
114U	Phenesterin		
115U	Phenobarbitol		50-06-6
116U	Phenytoin		57-41-0
117U	Phenytoin sodium		630-93-0
118U	Phosazetim		4104-14-7
119U	Phosmet		732-11-6
120U	Phosphamidon		13171-21-6
121U	Piperonyl sulfoxide		120-62-7
122U	Polybrominated biphenyls (PBB)		Class-07-8
124U	Propiolactone		57-57-8
127U	Propylthiouracil		51-52-5
128U	Rotenone		83-79-4
129U	Semicarbazide		57-56-7
131U	Styrene		100-42-5
132U	Sulfallate		95-06-7
134U	TDE		72-54-8
135U	TEPP		107-49-3
136U	Terbufos		13071-79-9
137U	Tetrachlorvinphos		961-11-5
138U	4,4'-Thiodianiline		139-65-1
139U	o-Toluidine		95-53-4
140U	Triaryl phosphate esters		Class-08-4
141U	Trichlorfon		52-68-6
142U	Trifluralin		1582-09-8
143U	2,4,5-Trimethylaniline		137-17-7
144U	Triamethylphosphate		
146U	Ziram		137-30-4
147U	Azinphosethyl		2642-71-9
148U	Azinphosmethyl		86-50-0
150U	pchlorophenol		106-48-9
151U	5-chloroototoluidene		96-79-4
152U	Chlorfenuinphos		470-90-6
153U	Sodium fluoroacetate		62-74-8
154U	bis(Trinbutyl tin) oxide		56-35-9
155U	Vinylidene chloride		75-35-4
157U	3-amino-9-ethyl carbazole hydrochloride		57360-17-5
158U	Aniline hydrochloride		142-04-1
159U	Azobenzene		103-33-3
160U	1,3-Butadiene		106-99-0
161U	Butyl benzl phthalate		85-68-7
162U	1-chloro-4-phenoxybenzene		7005-72-3
163U	1-chloropropene		590-21-6
164U	P,P' DDE		72-55-9
165U	N,N'-Diethylthiourea		105-55-5
166U	1,2-Epoxybutane		106-88-7
167U	Kanechlor C		59299-51-3
168U	N-Nitrosomethylvinylamine		4549-40-0
169U	Octachlorostyrene		29082-74-4

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
170U	Semicarbazide hydrochloride		563-41-7
171U	Tributyltin (and other salts and esters)		688-73-3
172U	1,2,3-Trichlorobenzene		87-61-6
173U	1,2,4-Trichlorobenzene		120-82-1
174U	Urethane		51-79-6
175U	Vinyl bromide		593-60-2

THE ENVIRONMENTAL QUALITY COMPANY, Michigan
Disposal Waste Treatment Plant – MID 000 724 831

WORK PLAN FOR THE LAB COMPATIBILITY TEST

Statement of Purpose:

This workplan has been developed in compliance with Condition VII(B)(1) of the Michigan Disposal Waste Treatment Plant's (MDWTP's) Hazardous Waste Operating License approved by the Michigan Department of Environmental Quality (MDEQ), Waste Management Division (WMD) on September 30, 1999.

This document explains the steps taken to verify the compatibility of (1) waste(s) with the other wastes in a storage or treatment/storage tank, and/or (2) reagent(s) prior to placement into a storage tank or a treatment/storage tank.

1) Before a given shipment of waste arrives:

   a) A Receiving Schedule is developed for the Plant for each day based on the anticipated shipments of specific waste streams.

   b) Based on this schedule, Batch Tickets for each tank are developed for the Bulk Loads to be received and adjusted as the schedule changes. These batches are developed based on waste codes, waste category, and anticipated volumes.

2) After a given shipment of waste arrives:

   a) For bulk loads (in which the vehicle is the container), a sample is collected from the vehicle for fingerprinting.

   b) For loads of containerized waste:

      i) The waste is unloaded from the vehicle onto the container unloading/staging area.

      ii) Samples are taken from each waste stream in accordance with the Waste Analysis Plan (WAP).

      iii) The sample(s) is brought down to the Acceptance Laboratory (Lab) and is used for fingerprinting and for compatibility testing.

         (1) The sample is used to complete the fingerprinting by the Lab prior to acceptance.

         (2) If that waste stream is being added to a Batch Ticket already developed, then the same sample will be used for the compatibility test after the fingerprint is complete.

         (3) If that waste stream is being stored on the one of the approved storage areas, then the sample will be stored in the Lab until that waste stream has been added to a batch and must be compatibility tested.

         (4) This sample is kept until the container(s) is assigned to a tank. If the fingerprint sample is no longer available, then a new sample is taken for the compatibility testing.

3) Adding Loads of containerized waste to batches:

   a) Plant personnel evaluate the batches and decide which of the waste streams being stored on one of the approved storage areas can be placed in the treatment/storage tank with the bulk waste in the batches.

      i) Waste streams are added to the batches of bulk load waste with similar waste codes.

      ii) Waste streams are marked for a batch and the Lab uses the sample brought to the Lab fingerprinting to do the compatibility test.

4) Prior to placement of a load in a tank:

   a) A disposal plastic container (mock tank) is designated for each storage and treatment/storage tank at the Plant.

   b) A portion of the sample of the waste, relative to the quantity received, is placed into the appropriate mock tank to conduct a compatibility test.

   c) A table kept in the Lab (see Attachment 1) lists volume equivalencies to use as a guide when adding material to a mock tank.

   d) The waste in the mock tank passes the compatibility test. This includes the evaluation of the following parameters:

      i) No gases

      ii) No odor

      iii) No fire

      iv) No unexpected heat produced

   e) The Post Delivery Inspection Form (PIF) is then marked with the corresponding treatment/storage tank at the Plant. The waste can then be placed into the treatment/storage tank marked on the PIF form.

5) Prior to treatment of a batch:

   a) The Plant Supervisor(s) is responsible for the final determination of the following: (1) the maximum amount of waste that will be placed into a tank for each batch, (2) when that level has been reached, and (3) what order the waste will be placed into the tank.

   b) When all the waste in that batch has been placed into the treatment tank, the Treatment Chemist develops a treatment recipe.

      i) The treatment recipe includes the type and quantity of reagents to be added to the treatment tank for that batch.

      ii) This treatment recipe is either (1) written on the tank log, which is then distributed to the Plant, or (2) communicated verbally to the Plant Personnel. The treatment recipe is also written on the batch ticket.

   c) The Plant Personnel contact the Lab with the treatment recipe and asks permission to treat the tank.

d) The Lab then adds the reagents in the treatment recipe to the corresponding mock tank.

i) A table kept in the Lab (see Attachment 1) lists volume equivalencies used as a guide when adding material to a mock tank.

ii) If a batch placed in a treatment/storage tank includes incidental packaging materials, then an equivalent volume of paper, wood and/or plastic (i.e. cocktail umbrellas) will be added to the mock tank to simulate those materials.

e) The reagents pass the compatibility test in the mock tank. This includes the evaluation of the following parameters:

i) No gases

ii) No odor

iii) No fire

iv) No unexpected heat produced

f) The results are marked in the Reagent Compatibility Log. The lab contacts the Plant by CB radio and tells them "okay to treat tank #."

g) The Plant then adds the treatment reagents in the treatment recipe to the batch in the tank.

6) After treatment of the batch:

a) A sample from the tank is taken to the Lab for clearance testing.

b) If the sample for the treated batch in treatment tank does not pass, the waste must be retreated. The Treatment Chemist will add further treatment reagents to the treatment recipe. Any reagents used to further re-treat the batch in the treatment tank are also added to the mock tank.

c) Once the sample for the treated batch passes, the mock tank is emptied and rinsed for the next batch.

7) Recording information:

a) The results from the mock test are record and kept in the Lab. The results of the mock test of the reagents in the treatment recipe are recorded in the Reagent Compatibility Log.

b) The results of the compatibility testing, fingerprint and tank # are recorded on the lab worksheet or on the drum log, in our computer database and in a binder kept in the lab labeled "MDI Receiving Log".

Attachment 1

VOLUME EQUIVALENCIES USED BY THE ACCEPTANCE LABORATORY

- 20yd roll off = 40cc, 40ml, ½ cup
- 5000 gal tanker = 50ml
- 2500 gal tanker = 25ml
- 100 gal = 1ml
- 1 drum = ½ ml
- 1 yard = 2ml, 2cc

Reagent1
1/17/00, 9:28 AM
Contact: Acceptance Lab Manager

Attachment 2 - Reagent Compatibility Log

IDENTIFICATION			REAGENTS				RESULTS		
				Time					
Plant Contact	Batch #	Tank #	Date	Start adding Reagent	Stop adding Reagent	Reagents and Quantity Added	Passed Test? (Y/N)	Lab Tech Initials	Comments

THE ENVIRONMENTAL QUALITY COMPANY
STANDARD OPERATING PROCEDURE

SOP Number L-002-018
Effective Date 02.07.2001
Revision Number 6
Revision Date 07.12.2004

SCREENING OF POSSIBLE OXIDIZERS (as defined by 49 CFR 173.151)

A. Apparatus

1. 150 mL disposable beaker and lid
2. Disposable pipette

B. Reagents

1. Concentrated Sulfuric acid
2. Potassium Iodide-Starch indicator paper
3. Distilled (DI) water

C. Method

1. Place a small amount of the sample (5-10 mL/g) into the disposable beaker.
2. If the sample is a dry solid, wet with DI water.
3. Wet Potassium Iodide-Starch indicator strip with sample.
   a. A purple color change indicates a positive for KI paper.
   b. Record in logbook the result and any possible matrix interference (i.e. Sample was black).
4. Using a disposable pipette, **slowly** add Concentrated Sulfuric Acid, dropwise, into the sample beaker. **(Use caution with suspected strong oxidizers; the reaction may be violent!)**
   a. A positive result is indicated if the sample reacts with the acid producing orange gas; assumed to be NO_X. You may need to cap the beaker in order to see the orange gas. Cap loosely.
   b. Record any reaction in the logbook.

D. Calculations

1. None

E. Quality Control Requirements

1. An example Potassium Iodide-Starch indicator strip positive can be observed using Hydrogen Peroxide or bleach.

2. An example Sulfuric acid positive can be observed using Potassium Nitrate.

F. Environmental Conditions

1. None

ATTACHMENT 2

INSPECTION SCHEDULE

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MID 000 724 831

GENERAL INSPECTION SCHEDULE

40 CFR 264.15b & Part 111, Rule 504(1)c

MICHIGAN DISPOSAL WASTE TREATMENT PLANT (MDWTP)

GENERAL INSPECTION SCHEDULE

40 CFR 264.15b & Part 111, Rule 504(1)c

Purpose:

The employee designated by the Owner or Operator as the Inspector will inspect the facility for malfunctions and deterioration, operator errors, and discharges which may cause or lead to release of hazardous waste constituents to the environment; or a threat to human health. The Inspector conducts these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

Inspection Categories:

The Operator has developed and the Inspector follows a written schedule for inspections in compliance with RCRA, Part 111 and the Rules:

1) Safety and emergency equipment

2) Security devices; and

3) Operating and structural equipment important to preventing, detecting, or responding to environmental or human health hazards.

Inspection schedule:

The inspection schedule is kept at the facility. The inspections are to be conducted at the frequency and timeframe indicated below:

- Daily - Each day the facility is handling hazardous waste
- Monthly - Last operating week of the month
- Quarterly - during the calendar quarter
- Annual - during the calendar year

Inspection Frequency:

The frequency of inspection is based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration, or malfunction, or any operator error goes undetected between inspections.

Inspection Requirements for Waste Handling and Storage areas:

As applicable to the facility, the inspection schedule meets the following requirements:

- *Areas subject to spills*: Areas subject to spills, such as loading and unloading areas, are inspected daily when in use. (40 CFR 264.15)
- *Container Storage Areas*: At least weekly, the inspector must inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors. Containers stored in the container storage areas are inspected for signs of deterioration. (40 CFR 264.174)

Inspection Requirements for Tank Systems:

As applicable to the facility, the inspection schedule meets the following requirements for all tank systems for storing or treating hazardous wastes:

Containment and Detection of releases: (40 CFR 264.193)

- *Leak detection devices* for primary containment are checked to detect the failure of that structure or the presence of any release within 24 hours or at the earliest practicable time if it is not possible to detect a release within 24 hours. If the leak detection system fails to detect the failure of the primary containment structure or the presence of any release within 24 hour, MDWTP will demonstrate to the MDEQ that existing detection technologies or site conditions will not allow the detection of a release within 24 hours. (40 CFR 264.193(c)(3))
- *Spilled or leaked waste* and accumulated precipitation must be removed from the secondary containment system within 24 hours or in as timely a manner as possible by following 40 CFR 264.193. If spilled or leaked waste and accumulated precipitation cannot be removed from the secondary containment system within 24 hours, MDWTP will demonstrate to the DEQ that removal of the released waste or accumulated precipitation cannot be accomplished within 24 hours. (40 CFR 264.193(c)(4))
- *Aboveground piping* without secondary containment is visually inspected for leaks on a daily basis. All such piping at the facility is provided secondary containment by the sloping concrete and blind trenches, therefore daily piping inspection is not mandatory but will be conducted as best management practice. (40 CFR 264.193(f)(1))

- *Welded flanges, welded joints, and welded connections* without secondary containment are visually inspected for leaks on a daily basis. (40 CFR 264.193(f)(2))
- *Sealless or magnetic coupling pumps and sealless valves* without secondary containment are inspected on a daily basis. (40 CFR 264.193(f)(3))
- *Pressurized aboveground piping systems with automatic shut-off* (e.g. excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that have no secondary containment are visually inspected on a daily basis. All such piping at the facility is provided secondary containment by the sloping concrete and blind trenches, therefore daily piping inspection is not mandatory but will be conducted as best management practice. (40 CFR 264.193(f)(4))
- *For all tank systems without secondary containment* meeting 40 CFR 264.193, annually conduct a leak test that meets the requirements of 40 CFR 264.191(b)(5) or other tank integrity method. (40 CFR 264.193(i)(1-2)) The annual tank integrity assessment procedure is as follows:
  1) Empty tanks completely
  2) Thoroughly clean the tank interior with a high pressure water wash or steam cleaning or another method acceptable to remove dry solids.
  3) Perform a thorough visual inspection of the tank interior and exterior (to the extent possible for in-ground tanks) for cracks, evidence of leaks, and seam integrity.

4) Have a independent, qualified registered professional engineer assess the overall condition of the tanks. A copy of the test report must be attached to the inspection forms.

5) Make any necessary repairs and properly document completion of the repairs.

Tank Inspections: (40 CFR 264.195)

a) Develop and follow best management practices for ensuring no overfilling of the tanks.

b) At least once a day inspect aboveground portions of the tank system, data gathered from monitoring and leak detection equipment, and the area immediately surrounding the tank system.

c) Proper operation of cathodic protection systems must be checked six months after installation and annually thereafter. All sources of impressed current must be inspected bimonthly (altemate months). (This item is not applicable at this time)

Inspection Records

The Inspector records inspections in an Inspection Log or Summary by compiling all completed Inspection Report forms into a binder kept onsite. These records, at a minimum, include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions. These records are kept for at least three years from the date of inspection. (40 CFR 264.73(b)(5)

Three Inspection Report Forms following this section are currently in use at the facility:

1) Daily Inspection Report

2) Monthly Inspection Report

3) Quarterly & Annual Inspection Report

These Inspection Report forms list and describe items to be examined at a specific frequency. On the reverse side of the form the inspection items and acceptable or unacceptable conditions for each inspection item are identified. A revised or improved version of any Inspection Report form may be implemented upon proper administrative change notification to MDEQ.

Inspection Response and Corrective Action

The operator remedies any deterioration/malfunction of equipment or structures, which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action is taken immediately.

If an unacceptable condition is detected, it is reported to the facility manager in charge at that time. The facility manager assigns responsibility for corrective action and a deadline by which corrective action has to be taken on the condition.

On subsequent daily inspections, the Inspector monitors the condition until the situation is completely rectified. Once it is rectified, the date and time that the correction was made is noted on all previous Reports mentioning the defect.

MDWTP HW DAILY INSPECTION
MONITORING, OPERATIONAL, AND STRUCTURAL SYSTEMS

Date/Time:
Inspector:

DESCRIPTION	LOCATION	ACCEPTABLE?		CORRECTIVE ACTION (Who, What)	COMPLETED (When?)
		Yes	No		
West Bay - Integrity & Tanks (A, B, C, D)					
Tank Spills or Leaks -- None	Plant				
Tank Secondary containment - integrity	Plant				
Walls, Doors, Floors, Roofs -- Integrity	Plant				
West Pug Mills					
Screw Feeders or Mixer Leaks--None	Plant				
Discharge Conveyors Leaks--None	Plant				
East Bay - Integrity & Tanks (E, F, G, H)					
Tank Spills or Leaks -- None	Plant				
Tank Secondary containment - integrity	Plant				
Walls, Doors, Floors, Roofs -- Integrity	Plant				
East Pug Mill					
Screw Feeders or Mixer Leaks--None	Plant				
Discharge Conveyors Leaks--None	Plant				
Pump Room					
Spills or Leaks -- None	Plant				
NCSA Lime/Waste Storage Silos (1-6)					
Spills or Leaks -- None	Plant				
Operational -- Fitness	Plant				
NCSA Container Storage Area					
Spills -- None	Plant				
Containers not damaged or deteriorating. No leaks.	Plant				
Labels -- Complete & Readable	Plant				
Aisles -- 2' Clear	Plant				
Trenches -- Empty (See definition of Empty* on the back)	Plant				
ECSA Container Storage Area					
Spills -- None	Plant				
Containers not damaged or deteriorating. No leaks.	Plant				
Labels -- Complete & Readable	Plant				
Aisles -- 2' Clear	Plant				
Pads -- Integrity	Plant				
Trenches -- Empty (See definition of Empty* on the back)	Plant				
Tank Storage Farm (Vertical 16-21, 25, 27) & Aboveground Piping					
Spills -- None	Plant				
Leaks -- None	Plant				
Hi-Level Indicators	Plant				
Trenches -- Empty (See definition of Empty* on the back)	Plant				
2nd containment Walls & Floor -- Integrity	Plant				
SECSA					
Spills -- None	Plant				
Containers not damaged or deteriorating. No leaks.	Plant				
Labels -- Complete & Readable	Plant				
Aisles -- 2' Clear	Plant				
Pads -- Integrity	Plant				
Truck Dock					
Spills - None	Plant				

This inspecti hecklist for MDWTP is not limited to the areas in MDWTP's HW Permit

Volume of Containers SE – 181,800 Gallons Maximum
Number of Containers N, E[1], W Bay[2], E Bay[2] -- 1,500 Maximum[3]
[1]**The East Container Storage Area may store 600 drums**
[2]**East Bay and West Bay refers to the East and West Truck Unloading/Loading Areas within the treatment plant. Each bay may store 100 drums**
[3]**The N, E, E Bay and W Bay may store a combined total of 1,500 drums.**

INSPECTION CRITERIA

Lime/Waste Storage Silos
Verify that there are no spills. Verify that there are no leaks. Inspect silos for any signs of deterioration or damage.

Treatment Tanks (A - H)
Verify that there are no spills. Verify that there are no leaks. Secondary containment pilot lights functional.

Storage Tanks (Vertical 16-21, 25, 27) & Aboveground Piping
Verify that there are no spills. Verify that there are no leaks.
Hi-Level Indicators: Verify that all units are operating.
Inspect impoundment walls and floor for leaks, cracks or accumulation of liquids.

Processing Plant Building
Inspect walls, doors, floors, and roofs for signs of deterioration or damage. Verify that there are no leaks or cracks.
Inspect tracks on large doors to assure proper sliding and closing.

Pug Mills
Inspect Screw Feeders, pugmill & discharge conveyor for signs of leaks or spills.
Verify that units are operating satisfactorily.

Pump Room
Verify that there are no spills. Verify that there are no leaks.

Container Storage Areas
Verify that there are no spills. Inspect for leaks or cracks in dikes and the concrete or asphalt base.
Verify that labels are complete and readable. Verify that aisles have a clearance of a minimum of 2 feet.
Verify that the containers are closed (lids and bungs on securely) excepts when necessary to add or remove waste.
Verify that the number of containers in the N, E, W Bay and E Bay is at a maximum of 1,500. Verify that the volume of containers in the SECSA is at a maximum of 181,800 gallons.
Verify that trenches and sumps are empty*. Ascertain that the integrity of the containment system is satisfactory.
*Trenches and sumps are "empty" if all wastes have been removed that can be removed using the practices commonly employed to remove material from trenches and sumps.
Verify that no containers show signs of deterioration or leaking.

MDWTP WEEKEND &/OR HOLIDAY INSPECTION — **Date/Time:**

MONITORING, OPERATIONAL, AND STRUCTURAL SYSTEMS — **Inspector:**

DESCRIPTION (Quantity)	LOCATION	ACCEPTABLE		CORRECTIVE ACTION (Who, What)	COMPLETED (When)
		Yes	No		
West Treatment Tanks (A, B, C, D)					
Spills or Leaks -- None	Plant				
Secondary containment - integrity	Plant				
East Treatment Tanks (E, F, G, H)					
Spills or Leaks -- None	Plant				
Secondary containment - integrity	Plant				
West & East Pug Mills & Pumping Room					
Screw Feeders Leaks--None	Plant				
Mixers Leaks--None	Plant				
Discharge Conveyors Leaks--None	Plant				
Verical Storage Tanks/ Tank Farm (16-21, 25, 27) & Aboveground Piping					
Spills or Leaks -- None	Plant				
Hi-Level Indicators	Plant				
Secondary Containment - Integrity	Plant				
NCSA Container Storage Area					
Spills -- None	Plant				
Containers not damaged or deteriorating. No leaks.	Plant				
Trenches -- Empty (See definition of Empty* on the back)	Plant				
ECSA Container Storage Area					
Spills -- None	Plant				
Containers not damaged or deteriorating. No leaks.	Plant				
Trenches -- Empty (See definition of Empty* on the back)	Plant				
SECSA					
Spills -- None	Plant				
Containers not damaged or deteriorating. No leaks.	Plant				

This inspection checklist for MDWTP is not limited to the areas in MDWTP's HW Permit

Treatment Tanks (A - H)
Verify that there are no spills. Verify that there are no leaks.
Secondary containment pilot lights functional.

Storage Tanks (Vertical 16-21, 25, 27) & Aboveground Piping
Verify that there are no spills. Verify that there are no leaks.
Hi-Level Indicators: Verify that all units are operating.
Inspect impoundment walls and floor for leaks, cracks or accumulation of liquids.

Pug Mills & Pump Room & Tanks 11-12
Inspect Screw Feeders for signs of leaks or spills.
Verify that there are no spills. Verify that there are no leaks.

Container Storage Areas
Verify that there are no spills. Inspect for leaks or cracks in dikes and the concrete or asphalt base.
Verify that labels are complete and readable. Verify that aisles have a clearance of a minimum of 2 feet.
Verify that the containers are closed (lids and bungs on securely) excepts when necessary to add or remove waste.
Verify that the number of containers in the N, E, W Bay and E Bay is at a maximum of 1,500. Verify that the volume of containers in the SECSA is at a maximum of 181,800 gallons.
Verify that trenches and sumps are empty*. Ascertain that the integrity of the containment system is satisfactory.
*Trenches and sumps are "empty" if all wastes have been removed that can be removed using the practices commonly employed to remove material from trenches and sumps.
Verify that no containers show signs of deterioration or leaking.

EQ, BELLEVILLE - MONTHLY INSPECTION REPORT

SECURITY, SAFETY, & EMERGENCY EQUIPMENT

MDWTP ☐ WDS#2L ☐

Date/Time: ____________

Inspector: ____________

DESCRIPTION (Quantity)	LOCATION	ACCEPTABLE?		CORRECTIVE ACTION (Who, What)	COMPLETED (When)
		Yes	No		
I. Security					
Perimeter Fence -- Intact, Secure	Perimeter				
Warning Signs -- Present	Perimeter Fence				
II. Fire Extinguishing Systems					
Fire Extinguishers (11)	Plant				
In-Tank Foam System (1)	Plant				
Fire Extinguisher (1)	Landfill				
Fire Extinguisher (1)	Receiving				
Fire Extinguisher (1)	Receiving Lab				
Fire Extinguisher (1)	Analytical Lab				
III. Spill Control Equipment					
Drain Block -- Visquene/weight (1)	Plant				
Drain Block -- Visquene/weight (1)	Purchasing				
Front End Loader (1)	On-site				
Sweeper with backup alarm & Water Truck(1)	On-site				
Absorbents (1 pallet)	Plant				
IV. Communications & Alarm Systems	Daily systems check: X'd = OK.			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	29 30 31
Radio (1)/Telephone (1)	Security				
Radio (1)/Telephone (1)	Receiving				
Radio (1)/Telephone (1)	Lab				
Radio (1)/Telephone (1)	Plant				
Radio (1)	Landfill				
Emerg. Coordinators' Phone (1) & Pager (1)	Personal				
V. Decontamination Equipment	Weekly Shower & Eyewash check: X'd = OK				
Shower & Eyewash (1)	Analytical Lab			WEEK 1 / WEEK 2 / WEEK 3 / WEEK 4	
Shower & Eyewash (1)	Receiving Lab			WEEK 1 / WEEK 2 / WEEK 3 / WEEK 4	
Showers & Eyewash (10)	Plant			WEEK 1 / WEEK 2 / WEEK 3 / WEEK 4	
Shower (1)	Locker Room			WEEK 1 / WEEK 2 / WEEK 3 / WEEK 4	
Equipment Decontamination -- Wheel Wash (1)	Wheel Wash Bay				
Equipment Decontamination -- Wash Bldg (1)	WWTP				

Personal Protective Equipment (PPE): A large supply of PPE is maintained on-site in the Purchasing storeroom for use by qualified persons.
Respiratory protective equipment can only be issued by the Safety Director to trained and medically fit employees.
In case of power failure, generators on-site can be located by the WER Plant Manager or WWTP Operator.

EQUIPMENT CAPABILITIES & INSPECTION CRITERIA

I. Security

Verify that perimeter fence is intact and secure to prevent unknowing entry to the site.
Verify that warning signs are visable and present to prevent unknowing entry to the site.

II. Fire Extinguishing Systems

Verify that units are at the locations and in the quantities indicated in this inspection report to enable quick access to equipment for fire suppression.
Inspect to determine that all units are maintaining adequate discharge pressure to ensure effective fire suppression.
Verify that maintenance/service contract(s) are being fulfilled by vendor. Inspect the units for deterioration and damage. Replace defective units.
Verify In-Tank foam generating system is charged with foaming solution and has water pressure. Test the flow of foam to tanks.

III. Spill Control Equipment

Front End Loader: Determine the present, on-site availability of the equipment to move absorbents or sand and contained/absorbed spill residues.
Sweeper & Water Truck: Inspect the unit to determine its effective operation to clean up contained spill residues.
If mechanical problems exist that would render the unit unavailable for emergency duty, refer the unit to maintenance staff for repairs and fittings for wear, damage, or deterioration.
Verify that visquene and weight is available to block drains and provide containment of spilled materials.
Verify that at least 1 pallet of absorbent is available to soak up spilled, contained material.

IV. Communications & Alarm Systems

Record daily check that phone system and radios are working with a mark on the date to indicate "OK" on the day inspected.
Verify functional status of base stations and radio equipment used in the waste processing area to allow immediate on-site notification/communication about incident.
Verify telephone service provides communications between waste processing plant and Security, Receiving, Lab, and the Emergency Coordinators' phones.

V. Decontamination Equipment

Record weekly check that Showers and Eyewashes are working with a mark on the inspection week to indicate "OK" on the day inspected.
Verify that showers and eyewash are covered properly to provide a clean supply of water to rinse body parts affected by chemicals.
Verify that all areas/equipment are operational to provide water to rinse chemicals from equipment.

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

ANNUAL TANK INSPECTION

Date/Time: ____________

Inspector: ____________

TANK NO.	*DESCRIPTION*	*LOCATION*	*NO CRACKS OR LEAKS*		*SEAM INTEGRITY*		*SHELL THICKNESS**		*COMMENTS*
			YES	NO	YES	NO	YES	NO	
1	Silo	Plant							
2	Silo	Plant							
3	Silo	Plant							
4	Silo	Plant							
5	Silo	Plant							
6	Silo	Plant							
A	Treatment Tank	Plant							
B	Treatment Tank	Plant							
C	Treatment Tank	Plant							
D	Treatment Tank	Plant							
E	Treatment Tank	Plant							
F	Treatment Tank	Plant							
G	Treatment Tank	Plant							
H	Treatment Tank	Plant							
16	Vertical Storage Tank	Plant							
17	Vertical Storage Tank	Plant							
18	Vertical Storage Tank	Plant							
19	Vertical Storage Tank	Plant							
25	FG Vertical Storage Tank	Plant							
27	FG Vertical Storage Tank	Plant							

FG means tank with fiberglass construction.
*A certified testing lab will determine the shell thickness of all tanks. A copy of the test report must be on-site and easily accessible for review.

INSPECTION CRITERIA

Ascertain that the structural and containment concrete is not degraded.
Note: An outside contractor will be used for these inspections.

MDWTP Quarterly/Annual Inspection Report		Date/Time: Inspector:		
	Frequency	Acceptable?	Corrective Action (Who? What?)	Completed (When?)
		Y/N		
1. Vertical Tanks (16, 17, 18, 19, 25 & 27)				
a) Vents - Emergency Relief				
1) Functional	Quarterly			
2. Operating and Structural Equipment				
a) No cracks or leaks in the floor or walls of:				
1) Retaining Walls				
a) North	Annually			
b) East	Annually			
c) West	Annually			
2) Drum Storage Areas	Annually			
3) Tank Farm	Annually			
4) Haul Routes/Loading Area	Annually			
5) Building Structure	Annually			

ATTACHMENT 3

PERSONNEL TRAINING PROGRAM

SITE 2 (MDWTP/WDI) PERSONNEL TRAINING PROGRAM

PERSONNEL TRAINING FOR SAFE FACILITY OPERATION AND MAINTENANCE

40 CFR 270.14(b)(12), 40 CFR 264.16, and Part 111

CORPORATE OBJECTIVES TARGET SAFETY AND COMPLIANCE

EQ completes all required compliance training for associates in a timely manner. In order to accomplish this a comprehensive training plan is followed which encompasses safety, compliance with environmental standards, and job-specific training such as adherence to the waste analysis plan (WAP). One module found within this training plan is the training required under RCRA for persons who work at a hazardous waste facility. The requirements in 40 CFR 264.16 state that workers will be given a baseline awareness of potential hazards at the facility and how to respond to an incident involving the release of waste following the site Contingency Plan. This training program, the RCRA Contingency Plan and Emergency Response Procedures is described below.

THE RCRA CONTINGENCY PLAN AND EMERGENCY RESPONSE PROCEDURES

This section provides an outline of both introductory and continuing training programs provided by the facility owners and operators to prepare persons to operate or maintain the Hazardous Waste Management facility in a safe manner as required to demonstrate compliance with 40 CFR 264.16. The title of this training program is RCRA Contingency Plan and Emergency Response Procedures. This training is designed to meet actual job tasks in accordance with RCRA regulatory requirements in 40 CFR 264.16(a)(3).

GENERAL METHOD AND CONTENT OF TRAINING

Facility personnel shall successfully complete a program of classroom instruction and on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this part. The curriculum includes all the elements to fulfill both introductory and continuing training that will be given to each person filling a position related to hazardous waste management at the facility. An associate who is trained in hazardous waste management procedures, normally the Regulatory or Health & Safety Representative, directs this training.

Each manager is responsible for identifying the initial and continuing training needs of his/her employees to ensure facility compliance with RCRA. This information is communicated to the Regulatory or Health & Safety Representative who registers the employee into training classes. The manager also provides instruction on job-related standard operating procedures and other on-the-job training. This program includes instruction, which teaches facility personnel hazardous waste management procedures, including contingency plan implementation relevant to the position in which they are employed.

A. TRAINING CURRICULUM:

The training program is designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, emergency systems including;

(i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) Communications or alarm systems;

(iii) Responses to fires or explosions;

(iv) Responses to groundwater contamination incidents; and

(v) Shutdown of operations

B.TRAINING TIMING AND FREQUENCY

Each affected person completes the program within six months after the effective date of these regulations or six months after the date of their employment or assignment to a facility, or to a new position at a facility, which ever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements of the RCRA Contingency Plan and Emergency Response Procedures.

C. ANNUAL REVIEW

All facility personnel take part in an annual RCRA Contingency Plan and Emergency Response Procedures review.

D. DOCUMENTATION AND RECORD KEEPING:

The owner or operator maintains the following documents and records at the facility:

(1) Job Title and Employee List:

The job title for each position at the facility related to waste management, and the name of each employee filling each job; - per 40 CFR 264.16(d)(1) – See Attachment 1 (L Drive, Regulatory, Training, (year))

(2) Job Description:

A written job description is provided for each position is listed above. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, u must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position; - per 40 CFR 264.16(d)(2) – See Attachment 2 (L Drive, ISO, Job Descriptions, (Dept.), (Position)

(3) Training Requirements:

A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed; - per 40 CFR 264.16(d)(3) – See Attachment 3 (L Drive, ISO, Job Descriptions, Training requirements2001, (Position)

(4) Records;

Records that document the RCRA Contingency Plan and Emergency Response Procedure training or job experience has to be given to, and completed by, facility personnel; - per 40 CFR 264.16(d)(4) – See Attachment 1 (L Drive, Regulatory, Training, (year)) and See Attachment 4 (EQ New Employee or Job Transfer / Contractor Safety Orientation Checklist

E. RECORD MANAGEMENT

Training records on current personnel are kept until closure of the facility. Training records on former employees are kept for at least three years from the date the employee last worked at the facility. Such records are maintained on-site.

Personnel training records may accompany personnel transferred within the same company to another facility.

ATTACHMENT 4

CONTINGENCY PLAN

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MID 000 724 831

EQ -- THE ENVIRONMENTAL QUALITY COMPANY

PRESENTS

RCRA CONTINGENCY PLAN

AND

EMERGENCY PROCEDURES

FOR

MICHIGAN DISPOSAL WASTE TREATMENT PLANT

&

WAYNE DISPOSAL, INC. SITE #2

AT

BELLEVILLE, MICHIGAN

As revised 12/04
(Discard all previous versions)

RCRA CONTINGENCY PLAN AND EMERGENCY PROCEDURES

FOR

Michigan Disposal Waste Treatment Plant and

Wayne Disposal, Inc. - Site #2

49350 N. I-94 Service Drive

Belleville, Michigan 48111

RCRA CONTINGENCY PLAN PURPOSE

"Contingency Plan" means document that sets out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment." (R299.9102(p), 40 CFR 260.10)

The contingency plan has been designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

The provisions of the plan are to be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment(40 CFR 264.51(b))

TABLE OF CONTENTS

A1. Description of facility operations - Michigan Disposal Waste Treatment Plant

Description of General Facility Processes

The Michigan Disposal Waste Treatment Plant (MDWTP) operations include receiving, storage, and treatment of hazardous and non-hazardous waste permitted by the Michigan Department of Environmental Quality under the facility operating license (United States Environmental Protection Agency (USEPA) Identification (ID) Number (No.) MID 000 724 831).

The specific routine operations and work areas include:

- Waste receiving and quality control(QC)
- Waste loading/unloading
- Reagent unloading and tank storage
- Waste storage in tanks
- Waste treatment in tanks
- Container staging and storage and
- Shipment of waste off-site to permitted treatment, storage, and disposal facilities (TSDFs)

The requirements for operations in these areas are defined in and regulated by the facility operating license.

Waste Identification and Classification

The waste types acceptable for treatment and storage at the facility are defined in Part 111 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451) and 40 CFR regulations at part 261. The wastes acceptable for treatment listed in Appendix A of MDWTP's WAP.

Description of Waste Management Units

The MDWTP facility is a liquid and solid hazardous & non-hazardous waste storage and treatment facility. Containerized wastes may be stored on-site before and after treatment in one of five hazardous waste storage areas: the North Container Storage Area (NCSA), the East Container Storage Area (ECSA), the Southeast Container Storage Area (SECSA) and the East and West Treatment Building Bays. The facility is equipped with pollution control systems for particulate, odor, and emission control. Liquid hazardous wastes to be treated in the pozzolanic stabilization process may be stored in four, 20,000 gallon and vertical storage tanks (T-16 through T-19). Liquid reagents are stored in two, 15,000 gallon vertical tanks (T-25 and T-27).

Hazardous Waste dust may be stored in three 100 cubic yard (cy) silos (T-2, T-3, and T-6) on the west side of the plant. Lime kiln flue dust, cement kiln flue dust, and lime are also used for stabilization and may be used in all six silos (T-1 through T-6). The dusts are fed from the silos to the closest pugmill and treatment tank at a controlled rate to effect treatment of liquid and solid wastes. Other reagents, such as ferrous sulfate, may be added directly to the tanks in bag or bulk quantities.

Listed and characteristic hazardous wastes are stored and treated in sludge receiving tanks, sludge storage tanks, and pugmills on the west side of the plant (Tanks 2, 3, A, B, C, D, and 14) and similarly stored and treated on the east side of the plant (Tanks 6, E, F, G, H, and 15). In both cases, treatment consists of blending the waste in sludge feed tanks prior to treatment in the pugmills or mixing and treatment directly in the sludge storage/treatment tanks. Other chemical reagents may be selectively added in drum or bulk quantities.

Containerized hazardous waste and non-hazardous wastes are staged and stored on concrete pads at the NCSA, ECSA, SECSA and the East and West Treatment Building Bays. Drainage trenches constructed within the containment areas contain and control liquid runoff. Drums are transported from the pad into the plant using a barrel forklift. Then they are opened by carefully removing the tops or bungs and immediately emptying the contents with a vacuum truck or pouring contents directly into the sludge boxes or treatment tanks using the barrel forklift. The empty drums are placed into a roll-off box or other similar container for subsequent disposal.

The disposal operations are supported and directed from the office/lab and waste receiving site located near the entrance to the facility. These support operations assist to control and evaluate shipments received for conformance with pre-approval information regarding the specific properties, treatment, and documentation requirements. The facility waste characterization and analysis records are maintained on-site.

A2. Description of facility operations - Wayne Disposal, Inc. Site #2

<u>Description of General Facility Processes</u>

The WDI operations include the landfill disposal of hazardous and non-hazardous wastes permitted by the MDEQ under the facility operating license (United States Environmental Protection Agency (USEPA) Identification (ID) Number (No.) MID 048 090 633).

The specific routine operations and work areas include:

- Waste receiving and quality control
- Waste unloading
- Hazardous waste landfill and related appurtenances (piping, pumps, operation and maintenance, truck wheel wash buildings located within the area bounded by North Interstate 94 (I-94) Service Drive and Willow Run Airport)

The landfill is currently permitted with a design capacity of 11,000,000 cubic yards (cy) of in-place waste. The requirements for operations in these areas are defined in and regulated by the Hazardous Waste Treatment, Storage and Disposal Facility operating license. Non-hazardous wastes are managed in accordance with the facility's Part 115 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451). The WDI landfill is-located at the same site as the MDWTP treatment and storage facility (MID 000 724 831). The WDI landfill disposal operations are supported by the MDWTP office/lab and waste receiving, storage, and treatment operations located near the entrance of the facility. These operations assist to control and evaluate shipments received for conformance with pre-approval information regarding the specific properties, treatment, and documentation requirements. The WDI facility waste analysis records are maintained on-site.

Waste Identification and Classification

The waste types acceptable for treatment and storage at the facility are defined in Parts 111 and 115 of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451 (Act 451) and 40 CFR Regulations at Part 261.

The facility license has specific restrictions regarding the following waste types

NOT ACCEPTABLE for disposal:

- Ignitable wastes as described in Michigan Act 451 rule R 299.9212
- Reactive wastes as described in Michigan Act 451 rule R 299.9212
- Bulk or noncontainerized liquid waste or waste containing free liquids
- Containers holding free liquids, including laboratory packs
- Wastes which are banned from landfilling by regulations promulgated under 40 Code of Federal Regulations (CFR) Part 268 unless the wastes meet the applicable Land Disposal Restriction (LDR) treatment standards or a variance has been obtained from the USEPA
- Waste which will:
  (1) Adversely affect the permeability of the clay liner.
  (2) Produce a leachate that is incompatible with the clay liner, leachate collection system piping, or the off-site sewer system.
  (3) Generate gases that will adversely affect the permeability of the clay cap or create a violation of the air pollution control requirements of Part 55 of Act 451.

<u>Description of Waste Management Units</u>

The WDI facility includes a permitted hazardous waste landfill with primary and secondary liner systems, a leachate collection and removal system, and a leak detection, collection and removal system. The landfill operations also include run-on, run-off, and contaminant control systems including a vehicle wash facility and other landfill-related appurtenances and support buildings. When placed in the landfill, containers are at least 90% full or crushed, shredded, or similarly reduced in volume before burial in the landfill.

PLAN SCOPE (264.52)

264.52(a). Actions facility personnel must take to minimize hazards in response to fire, explosions, or any unplanned sudden or non-sudden release of hazardous waste

All MDWTP and WDI personnel are instructed to respond, in case of emergency, as follows:

1. Alert someone of the hazard(s).
2. If any persons in the immediate area are potentially endangered, advise them to leave immediately.
3. If any person has been seriously injured call 911 for EMT support.
4. Contact the Emergency Coordinator(s) in person, as necessary, by radio or phone (See Section 264.52(d), page 16 for the list of Emergency Coordinators).
5. Indicate nature of emergency and stand by to receive instructions from Emergency Coordinator or evacuate.
6. Shut down, as necessary, all processing and ancillary equipment per manufacturers instructions, associated with the incident.

The Emergency Coordinator will direct actions of all facility personnel to:

1. Identify hazards and assess extent of potential harm to human health or the environment.
2. Notify, as necessary, the appropriate Emergency Response Contacts listed on pages 13-16.
3. Respond in cooperation with outside agencies to minimize hazards.
4. Follow up response actions with required reports (verbal and written). This includes internal incident reports and providing information to regulatory staff to prepare the incident report(s).

If there is a fire, explosion, or other release of hazardous waste or hazardous waste constituents that could threaten human health or the environment, or a spill that reached surface water or ground water, then immediately notify the DEQ's pollution emergency altering system (PEAS) - telephone number

800-292-4706 if after hours, and the DEQ directly if between 8-5. The notification shall include all of the following information:

(a) The name and telephone number of the person who is reporting the incident.

(b) The name, address, telephone number, and EPA Identification No. of the facility.

(c) The name, address, and telephone number of the owner or operator.

(d) The date, time, and type of incident.

(e) The name and quantity of the material or materials involved and released.

(f) The extent of injuries, if any.

(g) The estimated quantity and disposition of recovered material that resulted from the incident.

(h) An assessment of actual or potential hazards to human health or the environment.

(i) The immediate response action taken.

264.52(b). Emergency Response Planning

This RCRA Contingency Plan is a part of the overall effort at the facility to predict, prevent, and properly respond to incidents. The RCRA Contingency Plan satisfies RCRA requirements for responses to emergencies involving hazardous waste.

264.52(c). Arrangements with local agencies - MDWTP & WDI

(a) The following are arrangements agreed to by local fire departments, police, hospitals, contractors, state and local emergency response teams to coordinate emergency services.

1) Local police, fire departments, and emergency response teams are made familiar with the layout of the facility (by independent review of copy of this contingency plan and upon response by ER contact and tours of the facility), properties of hazardous waste handled at the facility and

associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes.

2) The Primary emergency authority of the local police and fire department is set forth by state and local law or ordinance. The Van Buren Fire Department is deemed the primary emergency contact for situations related to this site's operations. The Van Buren Fire Department will make other emergency team contacts at their discretion, usually asking for the assistance of the Van Buren Police Department/Michigan State Police. This, of course does not preclude MDWTP and WDI personnel from exercising the option of contacting additional emergency units depending on the circumstances (A list of Emergency Response Contacts is provided in this section). Any others providing support to the primary emergency authority will follow the direction of the local police and fire departments.

3) All necessary support by emergency response teams, emergency response contractors, and equipment suppliers has been documented in this Plan.

4) Information to familiarize hospital staff with the properties of wastes involved in an injuries, incident, or illness resulting from fires, explosions, or releases will be provided at the time of response to an incident.

(b) No state and local authorities have declined to enter into such arrangements; if such refusal occurs it would be documented.

264.52(c). Emergency Response Contacts

Agency	Contact #	Emerg. #
Ambulance Services		
1. Huron Valley Ambulance Service, Inc. 2215 Hogback Road Ann Arbor, MI 48105 Contact: Mr. Dale Berry, Executive Director	(734) 971-4733	(734) 994-4111
Emergency Medical Services		
1. St. Joseph Mercy Hospital 5301 E. Huron River Drive Ann Arbor, MI 48106 Contact: Dr. Rob McCurdy, MD - Emergency Room	(734) 712-3456	(734) 712-3000
2. St. Joseph Mercy Health System - Business Health Services 3075 Clark Road, Suite 200 Ypsilanti, MI 48197 Contact: Dr. Joseph Valle, MD, Medical Director		(734) 712-2376
3. St. Joseph Mercy - Canton Business Health Services 1600 South Canton Center Road Canton, MI 48187 Contact: Mr. Anthony Burton, MD, Medical Director		(734) 398-7550
Poison Information		
1. Poison Control Center Children's Hospital of Michigan Harper Professional Office Building 4160 John R, Suite #616 Detroit, MI 48201 Contact: Dr. Suzanne White, Medical Director	(313) 745-5335	(800) 222-1222

Agency		Contact #	Emerg. #
Fire Departments			
1.	Van Buren Township Fire Department 46425 Tyler Road Belleville, MI 48111 Contact: Mr. Allen M. Smolen, Chief	(734) 699-8930	911
2.	Willow Run & Detroit Metro Airport Fire Department P.O. Box 801 Ypsilanti, MI 48198 Contact: Mr. Tim Hoeft, Fire Chief	(734) 485-6660 (734) 485-3602	Metro Dispatch (734) 942-3600 Control Tower: (734) 480-9247
3.	Ypsilanti Township Fire Department 222 South Ford Boulevard Ypsilanti, MI 48198 Contact: Mr. Tom Yurkunas, Chief	(734) 544-4225 (734) 544-4100	(734) 544-4224
Police Departments			
1.	Van Buren Township Police Department 46425 Tyler Road Belleville, MI 48111 Contact: Mr. Allen M Smolen, Public Safety Director	(734) 699-8930	911
2.	Taylor - State Police Post 12111 Telegraph Road Taylor, MI 48180 Contact: First Lieutenant Lynne Huggins	(734) 287-5000	911
State and Federal Emergency Reporting			
1.	State of Michigan: Pollution Hotline	(800) 292-4706	
2.	Federal: National Response Center	(800) 424-8802	

Agency	**Contact #**	**Emerg. #**
Van Buren Township Government		
1. Cindy King, Supervisor Van Buren Township 46425 Tyler Road Belleville, MI 48111 Contact: Dan Swallow, Environmental Director	(734) 699-8913	911
Special Agencies		
1. Western Wayne County Hazardous Incident Response Team (H.I.R.T) 14910 Farmington Rd Livonia, MI 48154 Contact: Mr. Alan Brandemihl, Chief Note: Hazmat Team may only be activated by an on-scene Fire Department Officer.	(734) 466-2431	911
2. Sara Title III Local Emergency Planning Committee Wayne County Emergency Management Office of Wayne County Executives 10250 Middlebelt Road Detroit, MI 48242 Contact: Mr. Sanford Altschul, Director of Emergency Management Note: LEPC is to be called only for suspected releases off-site.	(734) 942-5289	(734) 942-3600

264.52(d). Emergency Coordinators for MDWTP & WDI Facilities

Emergency Coordinators | Site phone number: (734) 699-6201

Primary:

	Tom Caswell	Office:	(734) 699-6293
	(Director of Op – MDWTP)	Pager:	N/A
	4605 Five Mile Rd	Cellular:	(734) 576-0420
	Ann Arbor, MI 48105	Home:	(248) 446-9621
	Kerry Durnen	Office:	(734) 699-6265
	(Director of OP - WDI)	Pager:	(313) 217-6829
	3970 Highlander Way	Cellular:	(734) 576-0189
	Ann Arbor, MI 48108	Home:	(734) 302-4239
	Tony Patrick	Office:	N/A
	(MDWTP Operation Mgr)	Pager:	N/A
	5746 Cary Dr.	Cell:	(734) 576-0382
	Ypsilanti, MI 48197	Home:	(734) 482-1972
Alternates:			
	Paul Haratyk	Office:	(734) 699-6214
	(MDWTP Superintendent)	Pager:	(800) 312-2539
	44846 Whitman	Cell:	(734) 576-0142
	Canton, MI 48187	Home:	(734) 844-1128
	Corey Grider	Office	NA
	(2nd Shift Supervisor)	Pager	NA
	6532 Brockhurst	Cell	734-576-0143
	West Bloomfield, MI 48322	Home	248-763-9236
	Rey Salce	Office:	(734) 699-6281
	(3rd Shift Supervisor)	Pager:	N/A
	1674 Liberty	Cell:	(734) 576-0137
	Lincoln Park, MI 48146	Home:	(313) 381-9025
	Michael L. Porath	Office:	(734) 699-6239
	(Landfill Mgr – WDI)	Pager:	(800) 312-0544
	1608 Wind Dancer Trail	Cell:	(734)576-0179
	Tecumseh, MI 49286	Home:	(517) 423-6996
	Ken Weber	Office:	(734) 699-6280
	WWTP Mgr	Pager:	N/A
	16447 Country Club Dr.	Cell:	(734) 576-0153
	Livonia, MI 48154	Home:	(734) 464-0310

264.52(e). Location of Emergency and Decontamination Equipment at the facility

Provided at the end of this Contingency Plan is a checklist of equipment on-site with the following capabilities:

1. Fire Extinguishing Systems
2. Spill Control Equipment
3. Communications & Alarm Systems
4. Decontamination Equipment

This "Security, Safety, & Emergency Equipment Monthly Inspection" (Figure 1) is used to document inspection, replacement, and repair of the items described.

264.52(f). Evacuation plan for facility personnel

Clearing Immediate Area

If any employee in the active hazardous waste treatment area or waste reception area encounters an emergency situation which they believe to present an imminent threat to human health or the environment, the individual employee is authorized to leave the area immediately and tell others to leave the area immediately.

Any available route away from the hazard may be used either on foot or by vehicle. The employee should proceed out the main gate to the service drive or out Denton Road to the service drive and notify security to contact the Emergency Coordinator. If security has been disabled use radio or first available phone to contact the Emergency Coordinator.

Evacuation of Entire Facility

Evacuation Signal:

If in the opinion of the Emergency Coordinator a general evacuation of the entire site is warranted, he will notify all persons on-site by radio and PA systems. All employees work under supervision of a supervisor in public address system range or direct radio contact with the Emergency Coordinators. Evacuation notice will be given verbally to these employees.

Primary Evacuation Route:

Upon receiving the evacuation order by radio, all employees, including persons in the non-hazardous areas, must immediately proceed out Denton Road to the service drive and congregate at that point. The security guards' list of persons on-site will be used for roll call.

Alternate Evacuation Route:

If wind direction and location of hazard blocks the Denton Road gate, the employees must exit the main gate to service drive and congregate east of the entrance. The security guards' list of persons on-site will be used for roll call.

Return to Site:

Employees should not return to the site until instructed to do so by the Emergency Coordinator, or until a general all clear signal is given over the radio/PA system.

264.53. Plan Distribution

1. On-Site Copy Locations: Official Copies of the Contingency plan can be found in the following locations on-site:
   a) MDWTP/WDI Spotter's Shed
   b) Guard Office
   c) Safety Office
   d) Administrative Building
   e) Receiving Building
   f) Lunchroom/Training Center
2. Off-Site Copy Locations: Official Copies of the Contingency Plan have been sent to the following agencies off-site:
   a) EQ Main Office (Wayne, MI)
   b) Each of the Emergency Response Contacts with addresses listed in section 264.52(c) of this plan.

264.54. Plan Revision

The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

(a) The facility permit is revised;

(b) The plan fails in an emergency;

(c) The facility changes - in its design, construction, operation, maintenance, or other circumstances - in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(d) The list of Emergency Coordinators changes; or

(e) The list of emergency equipment changes.

The Emergency Coordinator(s) will coordinate with Regulatory Affairs to initiate an update of the Contingency Plan whenever it becomes outdated.

Off-site copies will be distributed by certified mail, return receipt requested, with instructions to destroy all previous copies.

264.55. Availability and Authority of Emergency Coordinator

At all times there is at least one employee on the facility premises or on call (i.e. available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures.

This emergency coordinator is thoroughly familiar with all aspects of the facility's Contingency Plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout.

In addition, this person has the authority to commit the resources needed to carry out the contingency plan (See Memorandum of Authorization, page 21)

MEMORANDUM OF AUTHORIZATION

August 25, 2005

From: Timothy M Tilotti

To: All EQ Associates

RE: Authorization to commit resources in time of Emergency

Personnel in the following management positions are fully authorized to commit and to expend resources on behalf of EQ, the Environmental Quality Co., for reasonable needs in time of Emergency at Site #2, Belleville, MI

1. Vice President
2. Director of Operations
3. General Manager
4. Plant Superintendent
5. Shift Supervisor
6. Landfill Manager
7. WWTP Manager
8. Emergency Coordinator as designated in the EQ Site #2 RCRA Contingency Plan.

Signed,

Timothy M. Tilotti, Vice-President

cc: All copies of Contingency Plan

264.56. Actual Emergency Procedures to be carried out by emergency coordinator or designee

264.56(a). At time of incident

Whenever there is an imminent or actual emergency situation, the Emergency Coordinator (or his designee) immediately:

(1) Activates internal communication systems (Radio/ PA System) to notify all facility personnel; and

(2) Notifies appropriate state or local agencies with designated response roles if their help is needed.

264.56(b). In the event of a release of hazardous waste, fire, or explosion

The Emergency Coordinator must coordinate with Regulatory Affairs to immediately identify the character, exact source, amount and extent of any released materials. They may do this by observation and/or review of the facility records or manifests, and if necessary, by chemical analysis.

264.56(c). Assessment of possible hazards to human health or environment

The Emergency Coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).

Sudden Release (Spill) Control, Containment, Cleanup, and Disposal

In the event of a spill or release which could threaten human health or the environment, the following steps should be taken:

1. Contact the Emergency Coordinator for instructions.

2. The Emergency Coordinator shall give directions to:

   a) Isolate the area of the spill to prevent contact with any personnel.

   b) Determine whether the spilled material may enter or is entering the sedimentation basin, and if the potential exists, the discharge point from the sedimentation basin to the Quirk Drain must be closed.

   c) Determine the characteristics of the spilled waste for any special handling requirements. If feasible and safe, stop the release at the source of the flow by overpacking or uprighting containers, using valves, shut off switches, patches, lids or other mechanical devices. Drains or sumps may be sealed using visqueen and a weight such as a bag of absorbent.

   d) Vacuum any available spilled waste with the vacuum truck. Any remaining residue should be contained with absorbents and shoveled into containers in preparation for disposal. Solid wastes may be front-end loaded into containers or waste hauling vehicles.

   e) If the spill occurred in a paved area, the pavement should be cleaned with water and detergent solution, under high pressure and then rinsed twice with clean water, being sure to collect all spent cleaning and rinsing solutions with the vacuum truck. After the spill has been cleaned up, the spill area will be inspected for cracks, fissures or any other imperfection that might allow the spilled material to reach the subsoil. In the event that any cracks or fissures are found, three one-inch holes will be drilled through the concrete. The holes will be along the cracks or fissures and spaced to represent the area. A thin wall tube will be pounded at least six inches into the soil. The soil collected in the tube will be analyzed for the spilled constituents. If hazardous levels of spill constituents are detected, the concrete in the area should be removed and the area remediated as though the spill had occurred in an unpaved area. When completed, the new replacement concrete should include water stop. If hazardous levels of spill constituents are not detected, the holes should be filled with Emanco T-430 or equivalent in accordance with manufacturer's instructions.

f) In the event the spill occurs in an unpaved area, all visible contamination should be removed. At least six inches of "clean" soils surrounding the contaminated area should also be removed. Samples should then be taken for chemical analysis to confirm the absence of any contaminants from the spilled waste.

g) Containers of Hazardous Waste are properly labeled and marked and managed in generation accumulation areas. They are properly characterized and disposed of at a properly licensed waste management facility. A properly completed manifest is used if transport of liquids or hazardous waste to an off site destination is necessary.

3. The emergency coordinator shall assist Regulatory Affairs in the preparation of the appropriate reports described below.

264.56(d). Notification of Regional Authorities by operator

If the Emergency Coordinator determines the facility has had a release, fire, or explosion which could threaten human health or the environment outside the facility, he will report such findings and act as follows:

1. If the Emergency Coordinator suspects that the evacuation of surrounding local areas is advisable, he will inform Van Buren Fire Department, or Van Buren Police Department or MI State Police and assist the appropriate officials in deciding whether evacuation is necessary and, if so, assist in

determining what areas should be evacuated. In the event of fire, the Emergency Coordinator gives special consideration to potential impact of smoke or fumes on I-94 freeway traffic.

2. If there is a fire, explosion, or other release of hazardous waste that could threaten human health or the environment, or a spill that reached surface water or ground water, the Emergency Coordinator will immediately notify the DEQ's pollution emergency alerting system (PEAS) - telephone number 800-292-4706. The notification shall include all of the following information:

(a) The name and telephone number of the person who is reporting the incident;

(b) The name, address, telephone number, and EPA Identification No. of the facility;

(c) The name, address, and telephone number of the owner or operator;

(d) The date, time, and type of incident;

(e) The name and quantity of the material or materials involved and released;

(f) The extent of injuries, if any;

(g) The estimated quantity and disposition of recovered material that resulted from the incident, if any;

(h) An assessment of actual or potential hazards to human health or the environment;

(i) The immediate response action taken.

If any threat to human health or to the environment extends **offsite**, the Emergency Coordinator will also contact the National Response Center (800-424-8802) and report the following:

1. Name and phone number of reporter;
2. Name and address of facility;
3. Time and type of incident;
4. Name and quantity of material involved, to the extent known;
5. The extent of injuries, if any;

6. Possible hazards to human health or the environment outside the facility.

264.56(e). Preventing the spread of hazards

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

264.56(f). Response to fire, explosion, or release

If the facility stops operations in response to a fire, explosion, or release, the Emergency Coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes or other equipment, whenever this is appropriate.

264.56(g). Provision for treatment, storage, and disposal of waste generated in emergencies

Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

[Comment: Unless the owner or operator can demonstrate, in accordance with Section 261.3(c) or (d) of 40 CFR, that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 264 of 40 CFR.]

264.56(h). Prevention of and Preparation for future incidents

The Emergency Coordinator must ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed in the affected area(s) of the facility.

264.56(i). Notification of Compliance with section 264.56(h)

Notification must be given to the Regional Administrator, and appropriate state and local authorities, that the facility has taken the necessary steps to prevent and prepare for future incidents (as described in 40 CFR 264.56(h)) before operations are resumed in the affected area(s) of the facility.

264.56(j). Post Emergency Documentation and Reporting

Documentation:

The Emergency Coordinator will note in the Operating Record the time, date, and details of any incident that requires implementing the Contingency Plan.

Reporting:

Within **15 days** of any situation requiring implementation of the Contingency Plan, the Emergency Coordinator shall prepare a report to be submitted to the Regional Administrator (EPA) and DEQ District Supervisor, Waste Management Division, SE Michigan District (Warren). At a minimum, the report shall detail the following:

1. Name, address and phone number of the operator;
2. Name, address, and telephone number of the facility;
3. Date, time, and type of incident (e.g. fire, explosion);
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
7. Estimated quantity and disposition of recovered material that resulted from the incident.

ATTACHMENTS:

1. Monthly Inspection Form - see Excel Spreadsheet

2. Evacuation Routes & Emergency Equipment Locations

3. Site 2 – MDWTP/WDI Evacuation Routes Map

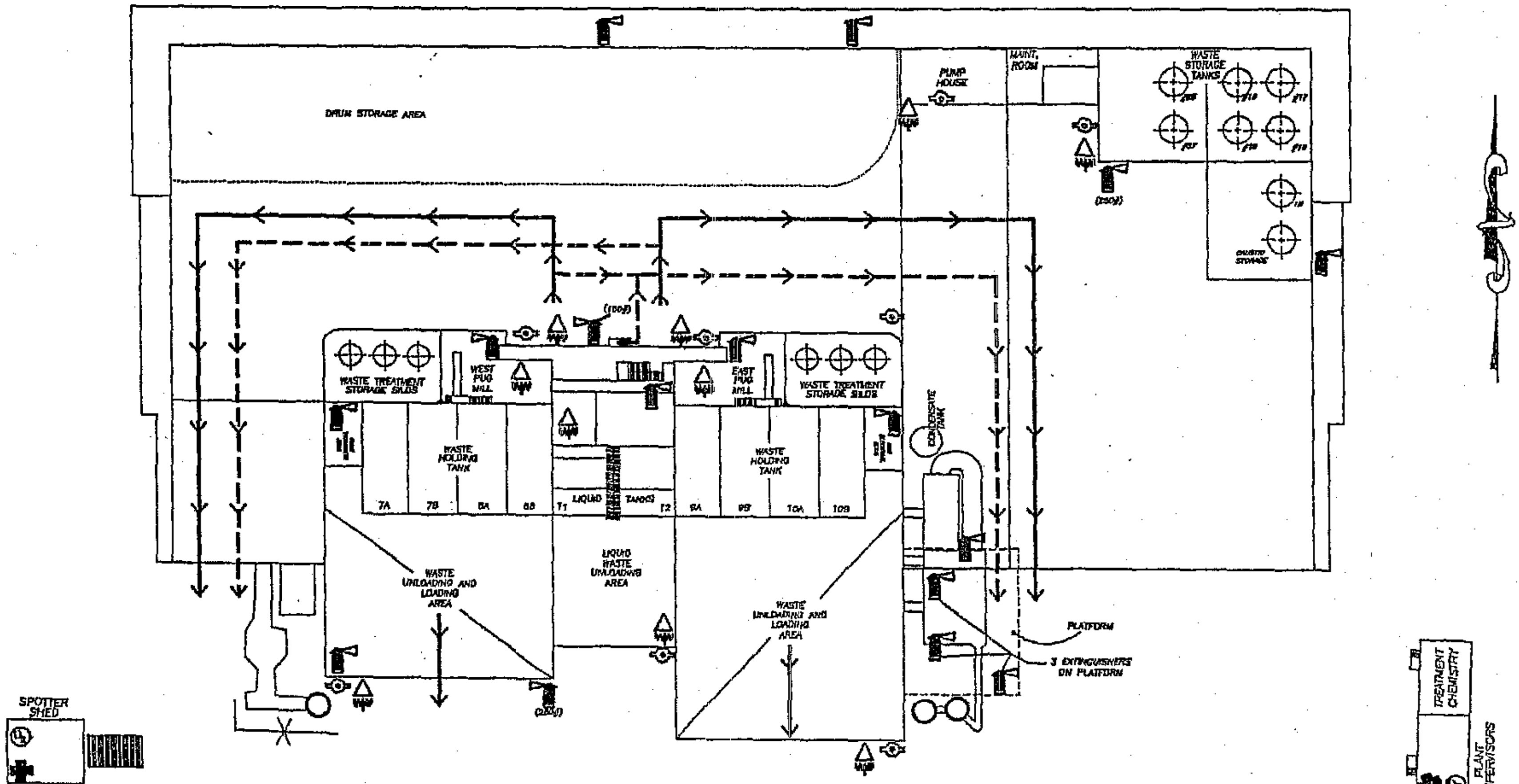
ATTACHMENTS:

1. Monthly Inspection Form - see Excel Spreadsheet

2. Evacuation Routes & Emergency Equipment Locations

3. Site 2 – MDWTP/WDI Evacuation Routes Map

MDWTP – EVACUATION ROUTES & EMERGENCY EQUIPMENT LOCATIONS

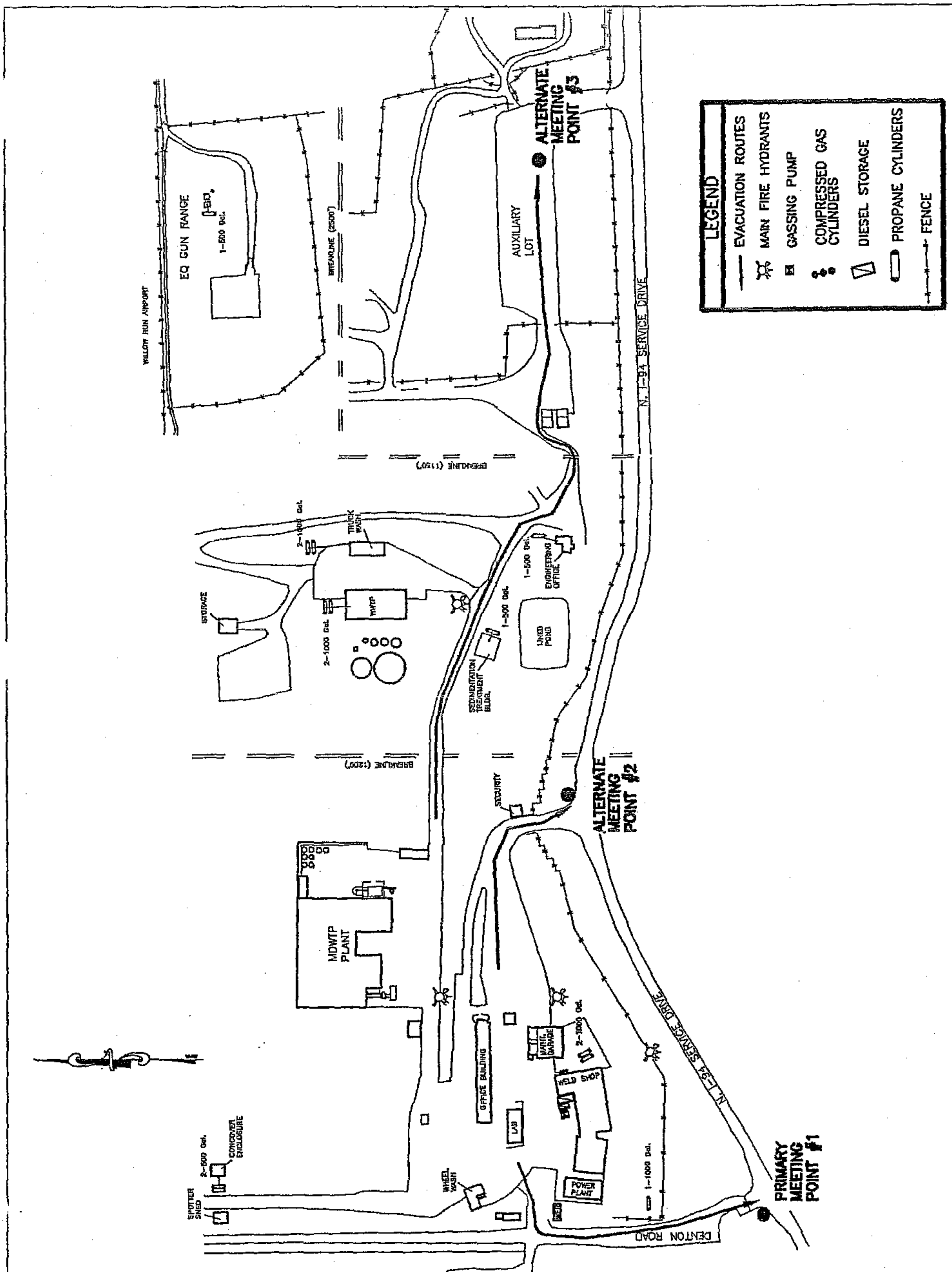


* NOTE: 150# & 250# WHEELED EXTINGUISHERS MAY BE MOVED TO DIFFERENT LOCATIONS FROM TIME TO TIME AND ALL SAFETY EQUIPMENT LOCATIONS ARE APPROXIMATE.

FIRST AID KIT LOCATION –
OXYGEN LOCATION –
EYEWASH / SHOWER LOCATION –
YARD HYDRANT LOCATION –
* FIRE EXTINGUISHER LOCATION –
PRIMARY EVACUATION ROUTE –
SECONDARY EVACUATION ROUTE –

IN THE EVENT OF A FIRE, EXPLOSION, OR A RELEASE, CALL EMERGENCY COORDINATOR. IN THE EVENT OF A MEDICAL EMERGENCY, CALL 911. THEN CONTACT THE APPROPRIATE MANAGER AND HEALTH AND SAFETY.

THE ENVIRONMENTAL QUALITY COMPANY	LOCATION: EQ-BELLEVILLE	TITLE: EMERG. EQUIP. AND EVAC. ROUTES TREATMENT PLANT
	SCALE: N.T.S. / DATE: 08/27/02	FILENAME: SU-WDIEP



THE ENVIRONMENTAL QUALITY COMPANY	LOCATION: WAYNE DISPOSAL SITE NO. 2	TITLE: EVACUATION ROUTES
	SCALE: NONE / DATE: 08/27/02	FILENAME: EQBSHED2

ATTACHMENT 5

CLOSURE PLAN

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MID 000 724 831

CLOSURE PLAN

40 CFR 270.14b & 40 CFR 264.112,

&

MI ACT 451 R504(1)c

TABLE OF CONTENTS

1. Closure Performance Standard

{R 299.9613 & 40 CFR 264.111, which is adopted by reference (ABR) in R 299.11003} This closure plan is designed to ensure that the facility will be closed in a manner that achieves the following:

a. Minimizes the need for further maintenance.

b. Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, postclosure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition byproducts to the ground or surface waters or to the atmosphere; and, as applicable.

c. Complies with the unit-specific closure requirements for each of the following units:

(Check as appropriate)

☒	Use and management of containers	R 299.9614 & 40 CFR 264.178, which is ABR in R 299.11003
☒	Tank systems	R 299.9615 & 40 CFR 264.197, which is ABR in R 299.11003
☐	Surface impoundments	R 299.9616 & 40 CFR 264.228, which is ABR in R 299.11003
☐	Waste piles	R 299.9617 & 40 CFR 264.258, which is ABR in R 299.11003
☐	Land treatment[a]	R 299.9618 & 40 CFR 264.280, which is ABR in R 299.11003
☐	Landfill	R 299.9619 & 40 CFR 264.310, which is ABR in R 299.11003
☐	Incinerators	R 299.9620 & 40 CFR 264.351, which is ABR in R 299.11003
☐	Drip pads[b]	R 299.9621 & 40 CFR 264.575, which is ABR in R 299.11003
☐	Miscellaneous units	R 299.9623 & 40 CFR 264.601-603, which are ABR in R 299.11003
☐	Hazardous waste munitions and explosive storage[b]	R 299.9637 & 40 CFR 264.1202, which is ABR in R 299.11003
☐	Boilers and industrial furnaces	R 299.9808 & 40 CFR 266.102(e)(11), which is ABR in R 299.11003

Notes:

[a] Not included in the module

[b] *Not yet included in 40 CFR 264.111; therefore not considered*

The closure procedures in Section 3 of this plan detail the work that will be completed to meet those standards. This closure will not require any post-closure activities.

2. FACILITY DESCRIPTION

MDWTP processing facility is located in the southwest corner of its licensed property.

2A. Facility Equipment

The following equipment is located at MDWTP:

Quantity	Size of WMU	Label #	Description	Location
		ECSA, NCSA, SECSA, East & West Treatment Buildings (Bays)	Container storage areas	
		East & West	Treatment Building (Bay)	E & W Treatment Building (Bays)
4	267 CY	Tanks A, B, G, H	HW Storage/ Treatment Tanks	E & W Treatment Building (Bays)
4	216 CY	Tanks C, D, E, F	HW Storage/ Treatment Tanks	E & W Treatment Building (Bays)
6	20,000 G	Tanks 16, 17, 18, 19, 25 & 27	Waste/Reagent Storage Tanks	ECSA Tank Farm
2	7,986 G/hr	Pugmills 14 and 15	Pugmills	NCSA
3	100 CY	Silos 2, 3, 6	HW/lime storage silos	NCSA
7		Dust, liquid & mixture	Screw Conveyor Systems 2 screws for the W dust silos; 1 for the E dust silos; 2 transfer screws (1 for W & 1 for E); 2 stackers screws (1 for W & 1 for E)	Pugmills

2B. Maximum Inventory

The maximum hazardous waste inventory to be processed/disposed:

Tank #	Description	Volume
2	Hazardous Waste Dust	100 yd^3
3	Hazardous Waste Dust	100 yd^3
6	Hazardous Waste Dust	100 yd^3
A	Hazardous Waste to be treated	267 yd^3
B	Hazardous Waste to be treated	267 yd3
C	Hazardous Waste to be treated	216 yd^3
D	Hazardous Waste to be treated	216 yd^3
E	Hazardous Waste to be treated	216 yd^3
F	Hazardous Waste to be treated	216 yd^3
G	Hazardous Waste to be treated	267 yd3
H	Hazardous Waste to be treated	267 yd3
14	Pug Mill Waste to be treated	
15	Pug Mill Waste to be treated	
16	Liquid Waste to be treated	20,000 g
17	Liquid Waste to be treated	20,000 g
18	Liquid Waste to be treated	20,000 g
19	Liquid Waste to be treated	20,000 g
25	Liquid Waste to be treated	20,000 g
27	Liquid Waste to be treated	20,000 g

Storage Area	Description	Volume
ECSA & NCSA	Waste to be treated	82,500 g
SECSA	Waste to be treated	181,800 g

Total Waste to be treated:	Volume (yds)	Volume (gallons)
Hazardous Waste Dust	300 yd^3	60,000 g
Hazardous Waste	3988 yd^3	805,524 g
Facility Total:	**4288 yd^3**	**865,524 g**

2C. Inventory of Auxiliary Equipment

See Contingency Plan: Equipment List

3. CLOSURE ACTIVITIES

3A. Schedule of Final Closure (comply with 3D):

MDWTP does not anticipate closure until April 1, 2050 or later. However, in the event of an unplanned or partial closure, the following schedule should be followed:

1. Removal, Treatment, and Disposal of Waste Inventory	
2. Cleaning of Tanks	
3. Cleaning of Equipment	
4. Cleaning Concrete & Asphalt Surfaces	
5. Disposal of Decontamination Agents	
6. Sampling, Analysis & Background	
7. Disposal of Concrete, Asphalt & Soii	
Total # of days	180 days

3B. Closure Procedures

1. Removal, Treatment, and Disposal of Waste Inventory

Waste Inventory requiring treatment will be processed at MDWTP and disposed of at a properly licensed facility. The volumes to be treated are identified in the closure cost estimate (of the permit application). Waste Inventory that cannot be treated on site will be transported by licensed waste transporters to properly licensed treatment, storage and disposal facilities.

2. Cleaning of tanks

The decontamination of tanks will be performed in compliance with the extraction technologies specified in 40 CFR 268.45 or will consist of triple rinsing. The sides and bottom of the waste treatment/storage tanks (A-H) will be cleaned, to remove all solid and sludge deposits. Cleaning time for the tanks (A-H) is estimated to be 2 hours per tank. Hydro-blasting is estimated to generate approximately 12 gallons of washwater per minute. Sandblasting is estimated to generate 50 lbs per minute of abrasive.

Items to be cleaned include, but are not limited to, the following:

Quantity	WMU Tank
6	waste/reagent storage tanks
3	hazardous waste/lime storage silos
8	waste treatment/storage tanks

3. Cleaning of Equipment

The decontamination of equipment will be performed in compliance with the extraction technologies specified in 40 CFR 268.45 or will consist of triple rinsing. In addition, a detergent cleaning apparatus will be used, if necessary, to clean the plant components equipment. The cleaning will be performed in a permitted TSDF storage area. Wash water, abrasives and/or other decontamination agents will be collected in the sumps, in the container storage areas, vacuum truck, or equivalent.

Cleaning time for a crew of three is estimated to be 2 hours per waste storage/treatment tank; 2 hours per pugmill or conveyor, and 20 minutes per line/pipe. Approximately 5 gallons of waste wash water will be generated per minute, accumulating 47,250 gallons of washwater. Up to 157.5 working hours will be required from a three-man crew.

Items to be cleaned include, but are not limited to, the following:

Quantity	Equipment or WMU
2	pugmills
6	screw conveyors
1	scrubber equipment
2	baghouses
	miscellaneous lines & piping

4. Cleaning Concrete & Asphalt Surfaces

The decontamination of the concrete and asphalt surfaces will be performed in compliance with the extraction technologies specified in 40 CFR 268.45 or will consist of triple rinsing. All secondary containment areas, drum storage areas, sumps, loading areas, ramps, and roadways will be decontaminated. Any cracks, joints, etc. will be sealed prior to cleaning and rinsing concrete and asphalt surface to prevent loss of contaminants through the surface. Approximately 50,000 square feet of concrete and asphalt will be cleaned by a three-man crew, over the course of 24 hours.

Items to be cleaned include, but are not limited to, the following:

Quantity	Concrete &/or Asphalt Surfaces
1	NCSA pad
1	SECSA pad
1	ECSA pad
2	East and West Treatment Bays
3	Roadways in NCSA, ECSA and at SECSA

5. Disposal of decontamination agents

The decontamination process will cause no escape of hazardous waste or hazardous waste constituents. All washwaters, abrasives, and other decontamination agents will be immediately collected from plant surfaces and sumps in the NCSA, ECSA, SECSA and the West and East Treatment Buildings.

Collected decontamination agents will be sampled prior to treatment or disposal. Abrasives will be properly characterized and disposed of in a properly permitted facility. Washwaters will be disposed of by transferring to an on-site wastewater treatment plant operated by WDI or to a properly permitted off-site facility.

6. Sampling, Analysis & Background

Sampling, testing & background will be conducted in compliance with the following documents:

- Part 111, Hazardous Waste Management, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
- Part 201, Environmental Remediation, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
- DEQ Sampling Strategies & Statistics Training Materials for Part 201 Cleanup Criteria (S3TM) will be used to determine sampling distance, depth, verification of remediation, etc. See the DEQ website for a copy of this reference document.
- DEQ Remediation & Redevelopment Division (RRD), Operational Memoranda
- Michigan Background Soil Survey 2005
- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW 846. EPA

6(a). Sampling

A soil sampling and testing program will be undertaken. The purpose of this program will be to determine any contamination that must be addressed in compliance with Part 111 and Part 201. After the contamination is defined in compliance with the above referenced documents, MDWTP will provide its selected remedy to address the contamination for review and approval to the DEQ prior to implementation.

After decontamination of MDWTP, initial soil samples will be collected. Soil samples will be collected at the following:

(1) any cracks in the concrete or asphalt,
(2) secondary containment trenches and sumps,
(3) unloading/loading areas, waste handling areas,
(4) any areas of suspect contamination,
(5) any areas where the integrity of the pad may be questionable.

Initial Soil Sampling

Sampling will be conducted in compliance with S3TM. For each sampling area listed above, initial sampling will be conducted by taking grab samples from 0" – 6" below the asphalt or concrete surface. If analysis (as detailed in the next section) verifies that no contamination exists, then no further sampling will be required. If the initial samples show contamination further sampling will be required to define the extent of the contamination horizontally and vertically.

Contaminated Soil Delineation

If the laboratory results indicate contaminants are present in the soils beneath the concrete pad, the following activities will be completed to delineate the impacted soil.

1) Soil samples will be collected at the location of the impacted soil to determine the vertical extent of the soil contamination.
2) Soil samples will be collected in each direction from the original boring to determine the horizontal extent of soil contamination.
3) If perched groundwater is encountered, a water sample will also be collected.
4) Samples will be analyzed for the contaminant of concern identified in the initial sample results. Laboratory analysis of the delineation samples will be completed in accordance with the methods and method detection limits listed in MDEQ RRD OP Memo #2 or the appropriate guidance at the time of closure.

5) The above process will be repeated at each initial sample location that exceeds the Generic Industrial Clean Up Criteria.

6(b). Analysis

As the samples are collected, each sample will be sealed in jar containers, packed in ice and transported to an analytical laboratory for chemical analysis. If sample analysis shows that the sample is contaminated, further samples will be taken and analyzed.

Each soil and/or water sample will be tested for metals, VOCs, Semi-Volatiles, pesticides, herbicides, cyanides, mercury and PCBs. The laboratory analysis of the samples will be conducted in accordance with MDEQ RRD OP Memo #2 and associated target detection levels to allow comparison to the clean up criteria established pursuant to Part 201. Any monitoring parameters, not exceeding the Generic Industrial Cleanup Criteria at a particular sample location, will be removed from further consideration at that location.

6(c). Background Determination for Native Soils

Background levels for metals in native soils may be established according to the methods outlined in S3TM. The data from each of the background metals samples will be compared to the default background metals concentrations listed in DEQ RRD OP Memo #1 or the appropriate guidance document at the time of closure.

7. Disposal of Concrete, Asphalt, Soil and/or Water:

Any concrete, asphalt, soil and/or water removed from MDWTP will be treated and/or disposed at a properly licensed facility.

3C. Partial Closure Plan

In the event it becomes necessary to close one or more, but not all hazardous waste management units, the following steps will be required:

Hazardous Waste Management Unit	Closure Steps[1]
Tank 2, 3 & 6[2]	1, 2, 5, 6
Tanks A, B, C, D, E, F, G & H	1, 2, 5, 6
Tank 14 & 15	1, 2, 5, 6
Tank 16, 17, 18, 19	1, 2, 5, 6
Tank 25 & 27	1, 2, 5, 6
North Container Storage Area (NCSA)	1, 4, 5, 6
East Container Storage Area (ECSA)	1, 4, 5, 6
Southeast Container Storage Area (SECSA)	1, 4, 5, 6
East and Waste Treatment Building Bays	1, 4, 5, 6

[1] The steps listed correspond to the descriptions under section A - Closure Procedures found in this Closure Plan
[2] The silos have only been used to manage fine particulate material. In the interest of waste minimization and efficiency, it is anticipated that the silos will be decontaminated without the use of any water or liquid decontamination agents.

3D. Reporting & Certification Requirements

- MDWTP will be to determine any contamination that must be addressed in compliance with Part 111 and Part 201. After the contamination is defined in compliance with the documents referenced in this Closure Plan, MDWTP will provide the DEQ with its chosen remedy for review and approval prior to implementation.
- Final closure activities will be initiated **<u>within 90 days</u>** after receipt of the final volume of hazardous wastes and completed **<u>within 180 days</u>** of receipt of the final volume of waste. (R 299.9613 & 40 CFR 264.112(d)(2) & 264.113(a)&(b), which is ABR in R 299.11003)
- The DEQ Director must be notified **<u>within 60 days</u>** before partial/final closure begins. A copy of the current or updated partial/final closure plan for the hazardous waste management unit or units that are being closed shall accompany the notification. (R 299.9613 & 40 CFR 264.112(d)(2) & 264.113(a)&(b), which is ABR in R 299.11003)
- Extension for Final Closure - In the event that an extension for closure is necessary, an extension must be requested in accordance with the following: (R 299.9613 & 40 CFR 264.112(d)(2) & 264.113(a)&(b), which is ABR in R 299.11003)
- A certification will be submitted **<u>within 60 days</u>** of final or partial closure that the hazardous waste management unit has been closed in accordance to with specifications in the approved closure plan. The certification shall be signed by the owner/operation and by a professional engineer and shall include all of the following supporting documentation: (R 299.9613 & 40 CFR 264.112(d)(2) & 264.113(a)&(b), which is ABR in R 299.11003)
    - The results of all sampling and analysis
    - Sampling and analysis procedures
    - A map showing the location where samples were obtained

- Any statistical evaluations of sampling data
- A summary of waste types and quantities removed form the site and the destination of these wastes.
- If soil has been excavated, the final depth and elevation of the excavation and a description of the fill material used.

- Upon request, submit to the DEQ Director any documentation not listed in subrule (3) of this rule that supports the professional engineer's certification. (Rule 613(4))

ATTACHMENT 6

WASTE DELIVERY PROCEDURES

SITE 2 (MDWTP/WDI)

Waste Delivery Procedures

40 CFR 270.14b & PART 111, R504(1)c

TRAFFIC PATTERN

40 CFR 270.14b and Part 111, R 504(1)c

TABLE OF CONTENTS

1. Traffic Pattern

The internal road network, traffic pattern and control devices are shown in the engineering plans prepared by Midwestern Consulting, Inc. for the Wayne Disposal, Inc. Site #2 Landfill (WDI) (submitted in March 1995).

Inbound Traffic

Vehicles enter the Site 2 – Michigan Disposal Waste Treatment Plant (MDWTP)/ Wayne Disposal, Inc. (WDI) facility through the main entrance area located at 49350 N. I-94 Service Drive, Belleville, pass the security guard at the gate and approach the Receiving Building by a path up the middle of a large paved apron. Each bulk waste vehicle continues along this central corridor onto the vehicle scales for weigh-in. After weigh-in, the driver uncovers/untarps the load for sampling. The cover/tarp is then replaced to secure the load during the rest of the time that the bulk waste vehicle waits to be emptied.

Once inside Site 2, all vehicles must stop at the Receiving Building for processing of manifests, other shipping documents and for load inspection. Bulk loads are sampled at this point whereas drums and containers must be unloaded at the Michigan Disposal Waste Treatment Plant (MDWTP) for sampling.

After the fingerprint at the laboratory in the Receiving Building indicates that the shipment may be accepted, vehicles waiting to be offloaded may be staged on-site. If the laboratory fingerprint indicates the load must be rejected, the vehicle circles the Receiving Building and then exits Site 2.

When operations are ready to unload the waste, the vehicle driver is instructed to proceed via the internal roadway system to the appropriate waste unloading area within Site 2. Drivers are directed to offload their shipment to:

1. The MDWTP East Treatment Building or West Treatment Building;
2. The MDWTP Truck Dock; or
3. The WDI dump box for loads designated to WDI.

Outbound Traffic

All empty waste transporting vehicles will proceed through Site #2's wheel wash. Bulk waste vehicles then proceed to the outbound scales. The driver finalizes recordkeeping at the Receiving Building and then exits Site 2 through the main gate.

On-site transfer of hazardous solidified treatment residuals from MDWTP to WDI are routed north along the road immediately west of Master Cell VI (MC VI) to the unloading platform in the northwest corner of MC VI.

Access road surfacing, construction, and structural analysis

Load bearing capacity requirements were met by analyzing existing road conditions for adequacy of design. The results are as follows:

A. The roads around the reception/office area, maintenance buildings and along the west side of Master Cell VI are built on native, in-situ soils. Broken concrete and gravel were used for road base and this entire area is surfaced with asphalt. Calculations show this road section to be nearly identical to design requirements and its condition bears this out as it is performing quite well without distress.

B. The road leading to Master Cell VI is designed similar to the reception area roads (described in item A) and has adequate bearing capacity and strength.

2. Estimated Volume of Traffic

MDWTP - The estimated number and types of vehicles received daily by MDWTP is:

	Hazardous Waste Hauling Vehicles	Average Number Per Day
A.	dump trailers	15
B.	Roll-offs containers	30
C.	Van Trailers Holding Containers	10
D.	Tankers	3
	Average =	**58 per day**

WDI - The estimated number and types of vehicles received daily by WDI is:

	Hazardous Waste Hauling Vehicles	**Average Number Per Day**
A.	2 axle single dump trailers	2
B.	5 axle single dump trailers	5
C.	2 axle roll-off boxes	10
D.	2 axle Caterpillar articulated dump vehicles	10
E.	2 axle flat-bed trailers	2
	Average =	**29 per day**

On occasion, when there is a remedial cleanup campaign received at the facility the volume of vehicles accepted at WDI can increase to 60+ vehicles per day.

3. Traffic Control and Traffic Signals

All waste transport companies which frequently use the facilities receive a written notification that:

1) Wastes shipped to the facility must be placed into closed containers or covered during transportation. The structural integrity of the waste containers must prevent leakage while in transit.

2) All vehicles transporting hazardous waste to or from the facility shall use Rawsonville Road to enter and exit the facility.

3) Vehicles transporting hazardous waste to or from the facility shall not park or stand on the I-94 Service Drive and

4) Following sampling at the facility, the trailer shall be closed/retarped; and shall remain closed while waiting to empty.

MDWTP processing facility is located in the southwest corner of its licensed property. MDWTP rests completely inside WDI, a hazardous waste landfill facility. Site 2 is completely surrounded by fences and warning signs are posting on the fence surrounding Site 2. (40 CFR Part 264.14(c))

The main entrance of Site 2 is clearly marked with an identification sign and there are signs, which instruct vehicle drivers how to proceed safely along the waste delivery corridor. Further verbal directions are provided to the driver at the Receiving Building when their paperwork is reviewed. A standard "Stop" sign is posted at the exit to the N. I-94 Service Drive.

A 24-hour security guard is stationed at the main entrance of Site 2 to monitor ingress and egress onto the site by employees, vendors, contractors and visitors. Any unauthorized person is excluded from the Site. Radio, cellular phones, and land phones are used for facility security communications.

4. Access Road Surfacing and Load Bearing Capacity

Existing road construction:

A. Near garages and check-in trailers and west side of MC VI

1. Approximately 6 inches Asphalt Concrete
2. Approximately 1 ft. of broken concrete and aggregate
3. Native Sand

Refer to the attached reference material about this design method. The following variables are estimated as follows:

Traffic index: 10

Design life: (Assumed in method) 10 years

Material "R" values:

Native sand = 30

Compacted clay = 15

Broken concrete/Coarse aggregate = 70

Broken Concrete/wood = 60

Analysis of adequacy of construction:

A. Roads near garages, check-in trailers and along west side of MC VI

TI =10

Subgrade R=30

Base R=70

Gravel Equivalent(GE) for surfacing=0.0032(TI)(100-R)=0.0032(10)(100-70)=0.96

Gravel Equivalent factor(G_f)=2.5(5.14/TI)$^{0.5}$=1.79

Thickness of asphalt concrete=GE/G_f=0.96/1.79=0.54 ft =6.5 inches

6 inches of Asphalt were used

GE required for road base=0.0032(10)(100-30)=2.24

GE provided by asphalt=1.79 x 0.5=0.9

GE to be provided by road base=2.24-0.9=1.34

G_f for base(for R=70 material)=1.1

Thickness of base required=1.34/1.10=1.2 ft =14.6 inches

Approximately 12 inches of base used

Summary:

	Design(In.)	Existing(In.)
Asphalt	6.5	6
Broken Concrete and aggregate	14.5	~12

FLEXIBLE PAVEMENT

STRUCTURAL SECTION DESIGN GUIDE

FOR

CALIFORNIA CITIES AND COUNTIES

PARTIAL DOCUMENT AS REFERENCE

(REVISED JANUARY 1973)

Acknowledgment

This revised guide was prepared through the cooperative efforts of the County Engineers Association of California, the league of California Cities and the California Division of Highways. Much appreciation is expressed to the various members and personnel of the above organizations who were responsible for the original design guide which was published in July 1968.

This revised version was prepared by George Sherman, Robert Smith, Joseph Hannon, George Dick and Karl Baumeister of the Materials and Research Department of the California Division of Highways. Credit should also be shared with Paul Wagner and George Ebenhack of the Design Department, Jack Kassel, and Herman Woodruff of the City and County Liaison Department of the California Division of Highways. Credit should also be shared with Paul Wagner and George Ebenhack of the Design Department, Jack Kassel and Herman Woodruff of the City and County Liaison Department of the California Division of Highways, and W.R. Lovering of the Asphalt Institute, for their review and comment. Appreciation is also extended to the City and County Engineers who have reviewed the rough draft and contributed to this publication by their suggestions.

Foreword

This booklet is intended to provide a concise and useful tool to the designer of city streets and county roads.

The information in this guide has been updated since the last printing in July 1968, but the concepts and methods used herein are not new. However, a new section has been added which covers the design of full depth asphalt concrete pavements.

The guide is based on the results of extensive studies, tests and numerous reports by various agencies concerning the many factors affecting the structural design of roadway sections.

This guide should prove quite helpful to many cities and counties irrespective of the amount or lack of laboratory facilities and testing equipment.

Suggestions for improvements to this guide may be directed to either the County Engineers Association of California or the League of California Cities.

Estimation of T.I. according to the road type

In the absence of more detailed knowledge, traffic may be estimated by considering the type of facility to be designed. Estimates of traffic made in this manner tend to be inaccurate, and for this reason, should allow for a safety factor. The estimated Traffic Index should be justified by a description of the facility, the area it serves, and the normal types of traffic carried. The table below lists several road categories and the T.I. which might be expected to correspond with these categories. The last four categories in the table are difficult to estimate. Since roads in these categories are more critical with regard to repair, due to heavier traffic, the T.I. should be estimated using either the standard method or the chart shown in figure 1.

Type of facility	T.I
Minor residential streets and cul-de-sacs	4
Residential streets	4.5
Residential collectors and minor or secondary collectors	5
Major or primary collectors providing for traffic movement between minor collectors and major aterials	6
Farm-to-market roads providing for the movement of traffic through agricultural areas to major arterials	5-7
Commercial roads(arterials serving areas which are primarily commercial in nature)	7-9
Connector roads(highways and arterials connecting two areas of relatively high population density)	7-9
Major city streets and thoroughfares and county highways	7-9
Streets and highways carrying heavy vehicle traffic. This would include streets in heavily industrialized areas	9+

Estimation of R-value using soil classification

Rough estimates of R-value can be made using some simple soil classification tests in conjunction with sand equivalent (SE) test. Each soil type (e.g. sandy clay, etc.) roughly encompasses a certain R-value range. The R-value range for a soil type may be narrowed by knowing more about the soil's plasticity and by knowing its sand equivalent value (Test method no. Calif 217). Soil classification sheets and triangular chart (Figures 3 and 4) are included as aids. To classify soils on the triangular chart (Figure 4), a sieve analysis and hydrometer analysis are necessary (Test Method Nos. Calif. 201, 202, and 203).

When the soil classification has been determined from figure 4, the chart in figure 5 may be used to approximate the R-Value. In this chart, the curves representing the various soil types show a stylized approximate frequency distribution of R-values for this particular type soil.

For fine grained materials, the upper tail or high R-value portion of the curve represents lower plasticity, relative to the soil type, while the lower tail represents soils of the same type having higher plasticity. The sand equivalent values provide additional subdivisions within the chart.

For a particular SE value, chances are good that the R-value for the same material will be as high or higher than the R-value designated by the corresponding dashed line. The converse, however, is not true since it is possible for a material to have a high R-value with a relatively low SE.

The curves for coarse-grained materials are affected in the same manner, by the presence of clay, with the lower tail representing materials with little or no clay, the lower tail represents hard, smooth-surfaced and poorly graded(well sorted) material while the upper tail represents rough-surfaced and well graded material.

The use of this chart must be tempered with good judgment and it should always be borne in mind that R-values obtained in this manner are estimations only. The reasoning behind these estimations should be fully documented in the materials report to provide to reviewers with as much basic data as possible.

ATTACHMENT 7

CONTAINER STORAGE PLANS AND SPECIFICATIONS

MDWTP CONTAINER STORAGE

40 CFR 270.15

AND

MI ACT 451, Part 111 R 504(2)

MDWTP CONTAINER STORAGE

1. STAGING & ACCEPTANCE OF CONTAINERIZED WASTE - (ECSA & NSCA)

Containers of waste are checked using the procedures in the Waste Analysis Plan (WAP). The WAP provides for Hazardous Waste Management Review, Waste Inspection and Sampling, Treatment and Storage Evaluation and Approval. Vehicles carrying containerized waste are initially directed to the Staging Area located south of the containment structure of the East Container Storage Area (ECSA). The containers are removed from the vehicle. Samplers visually examine the loads; pull samples, and submit the samples for testing. Specific sampling procedures for containers are outlined in the WAP. The waste is either deemed acceptable or rejected in accordance with the procedures and criteria specified in the WAP.

Off-specification wastes and rejected loads are managed following the procedures specified in Part 111. Rejected containers may be loaded back onto the waiting truck or other transportation arrangements are made. The driver is provided with the appropriate documents and allowed to leave the facility.

If wastes are acceptable, the laboratory assigns a treatment or storage designation. After vehicles have been unloaded, drivers are directed to the Receiving Building. Drivers return the completed facility documents to the Trained Personnel. Manifest information is completed using the computer system. Electronic manifests are completed and returned electronically to the generator. Hard-copy manifests are signed, dated, and drivers are given the Transporter copy.

2. STORAGE OF CONTAINERIZED WASTES – (ECSA, NCSA & SECSA)

After containers are visually inspected to ensure that they are in good condition and not leaking, they are placed in rows within the staging area. Containers may not be placed stored in standing water. When moved from the staging area to one of the storage areas, the containers are placed into rows. The storage units are constructed of materials that are compatible with the wastes to be managed within them. Stored containerized wastes are segregated with respect to the DOT Segregation requirements.

The rows are maintained with aisle space sufficient to meet the requirements of 40 CFR 264.35. Containers are placed into the storage area on pallets or directly onto the concrete slab using a fork-truck or other container/drum handling equipment.

The container storage area(s) and trench(s) are inspected at least once per day. Containers are stored in a manner that will contain potential leaks/spills within the containment area. Accumulated liquids collected in the containment structure or trench are removed within 24 hours of detection and may be removed by pump. Solids are removed by vacuum truck or by other means.

Containers less than 55-gallons that are attached to a pallet can be double stacked. Containers 55-gallon or greater may be double stacked.

A Table from Section 2.3 of the WAP, clarifies what type of activities can take place in each storage area.

2.a *ECSA Staging Area*

The Staging Area is located directly south of the East Container Storage Area (ECSA). Containers placed into this staging area will be relocated to a storage area by the end of the shift. After the containers are fingerprinted and accepted, the containers will be moved to one of the authorized container storage areas by the end of the eight-hour shift. For hazardous waste containers, the staging area is located within the boundary of the ECSA.

2.b *East Container Storage Area (ECSA)*

A maximum of 33,000 gallons or 600 55-gallon container equivalents may be stored in the ECSA.

The East Container Storage Area (ECSA) is located directly east of the waste treatment plant and immediately west of the east retaining wall. The ECSA is 112 feet measured north to south and 80 feet measured east to west. An irregular shape is created by the presence of the tank farm in the northeast corner of the ECSA.

Run-on is prevented by the north retaining wall and east retaining wall of the East Container Storage Area. Run-on from the south is prevented by the container staging area being at a higher elevation than the surrounding pavement. Run-off is prevented by approximately 1 percent slope to the east and north, combined with a drainage trench along the east wall. The containment area is designed to hold a 100-year storm and 10 percent of the maximum quantity of containerized liquid waste.

2.c North Container Storage Area (NCSA)

A maximum of 82,500 gallons or 1500 55-gallon container equivalents may be stored in the NCSA.

The North Container Storage Area (NCSA) is located directly north of the waste treatment plant, and is enclosed by roof, surrounding walls and both bay and man door(s) on each end of the NCSA. There is one designated hazardous waste storage area in the NCSA. The hazardous waste storage area is 227.45 feet long, running from the west wall to the east wall of the NCSA; and 49.79 feet wide measured perpendicularly from the north retaining wall. The inside boundary will be marked with a painted yellow line.

The NCSA is enclosed which reduces precipitation and run-on from entering. Run-off from the area is prevented in the same way. The NSCA area is sloped approximately 1 percent to the north where a drainage trench serves as a collection point for any precipitation and liquids in the event of spills or leaks in the NCSA. The containment area is designed to hold 10 percent of the maximum quantity of containerized liquid waste.

2.d Southeast Container Storage Area (SECSA)

The Southeast Container Storage Area (SECSA), located approximately 350 feet to the southeast of the treatment plant yard, is shown on the attached MDWTP Site Plan. The

SECSA is approximately 435 feet measured east to west and 180 feet measured north to south.

The area is designed and used primarily for the storage of large containers, e.g., roll-off boxes, dump trailers, box vans containing smaller containers. Thirty cubic yard dump trailers are one of the most commonly used containers by transporters delivering waste to the facility and by the facility itself.

Aisle space in the SECSA will be maintained in accordance with 40 CFR 264.35 and containers in the SECSA will be closed or covered during storage and properly labeled.

The SECSA is designed and operated to meet the secondary containment requirements of 40 CFR Subpart I with the exception of the asphalt base. No wastes containing free liquids will be stored in the SECSA until the base has been upgraded to an impervious material. The asphalt base of the area is free of cracks and gaps and is sufficiently impervious to contain leaks, spills, and accumulated liquid until the collected material may be removed.

The base slopes toward two catch basins. Catch basin 1 drains to catch basin 2 and catch basin 2, goes to the lined pond (see the S.E. Storage Area figure). Alternatively, accumulated liquid may also be collected from the sump and managed in the storage or treatment tanks at the MDWTP or other appropriately permitted facility.

Groundwater monitoring is provided for the SECSA by existing wells. Data from these wells will be added to the existing reporting that is currently performed by MDWTP and submitted to MDEQ.

2.d.1 Southeast Container Storage Area (SECSA) – Future Container Storage

MDWTP management is currently evaluating the assessing the feasibility of constructing a concrete storage pad in the SECSA that will accommodate the storage of 181,800 gallons of containerized waste.

3. <u>MANAGEMENT OF LIQUIDS</u> - (ECSA, NCSA & SECSA)

Liquids may be removed by a vacuum truck or by pumping to the vertical tanks. Removed liquids are managed either through the waste treatment plant, through the on-site wastewater pre-treatment plant or off-site.

4. REMOVING WASTE FROM CONTAINERS

4.a. Removing Liquid Waste From Containers Using a Vacuum Truck or Pump

A pump or vacuum truck may be used to remove liquids from containers. Removed liquids may be pumped directly to a permitted tank, into the vacuum truck or into a vacuum box. The pump, vacuum truck or vacuum box is staged next to or within the NCSA or ECSA and a suction hose tipped with a wand, is walked down a row of compatible waste containers to remove liquids. The bung (or the entire container lid if a bung is not present) is removed from each container in a row. The operator inserts the wand into the liquid waste, and transfers the liquid to the truck or waste tank. As each container is emptied, the operator moves to the next container of the same waste stream, or compatible waste type and continues until the specified containers have been emptied. Containers are managed in accordance with 40 CFR 264.173.

After emptying the specified containers, the operator drives the truck or vacuum box to the pump unloading station to pump the waste into the tank farm or the operator drives the truck or vacuum box to the waste treatment/storage tanks and gravity unloads the waste into the appropriate tank.

4.b. Removing Waste From Containers using a Fork Truck

If a vacuum truck or pump is not used, a fork truck is used to pick up the container(s) and transport them to the appropriate waste storage/treatment tank. The operator removes the entire lid or top of the container and the drum grappler inverts the drum, decanting the contents into the tank. After the operator visually confirms the container is RCRA empty, the container is righted and taken to the empty container disposal roll-off box.

4.c. Removing Waste From Hard To Empty Containers

Wastes are occasionally received in containers that cannot be removed using the methods described above in paragraphs 3.a and 3.b. The hard to empty containers are removed from storage and staged in front of the treatment tanks on either side of the treatment plant. Up to 200 containers may be staged/stored in both plant loading/unloading bays with care taken to ensure proper aisle space. The attached figure, MDWTP Facility Drawing, shows a typical storage arrangement of containers in the east bay.

Staged containers are picked up with a container-sizing implement attached to a backhoe. The container is then placed over the appropriate treatment tank and sized into the tank. The contents of the container are emptied and the destroyed container is also deposited into the tank for appropriate treatment with the batch.

4.d. Removing Waste From Large Containers

Large containers such as roll-off boxes, vacuum boxes or dump trailers are emptied while still attached to a transport vehicle. To empty, the containers are opened on one end, the other end is raised and the waste slides out into a treatment tank.

5. DISPOSAL OF EMPTY CONTAINERS

After the containers are emptied, the operator confirms that the container is RCRA empty through a visual inspection. The containers are then loaded into a dump truck or roll-off box, compacted or crushed, and subsequently transported to a permitted landfill for disposal or to an appropriate recycling facility.

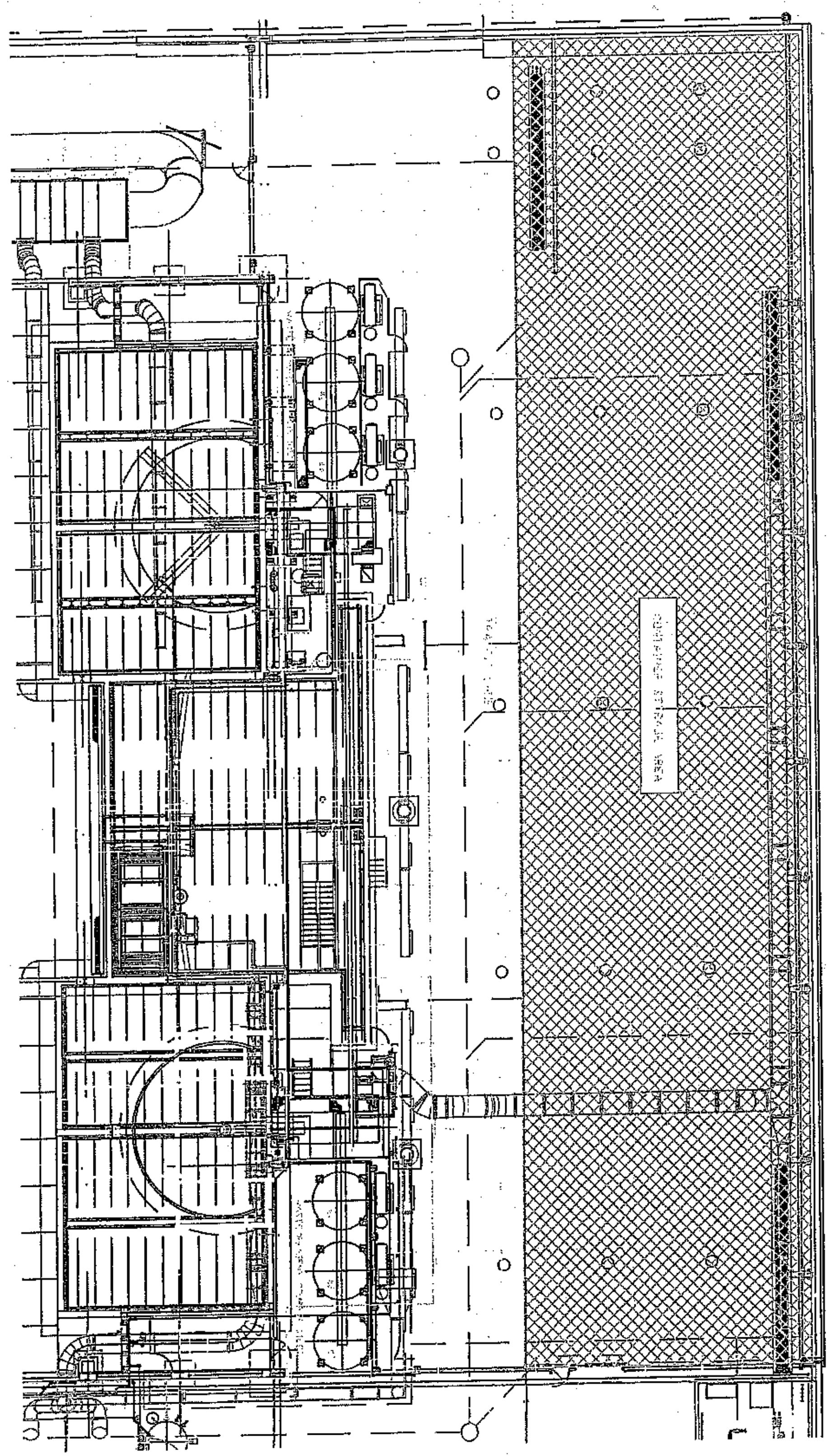
Dump trailers and roll-off containers are reusable and are returned to service after they are determined to be RCRA empty.

If it is observed by the operator that a container is not RCRA empty, the residues are removed by scraping, pouring, decanting, etc., as required and transferred to the designated receiving tank.

6. CONTAINERIZED WASTE BULKING/CONSOLIDATION

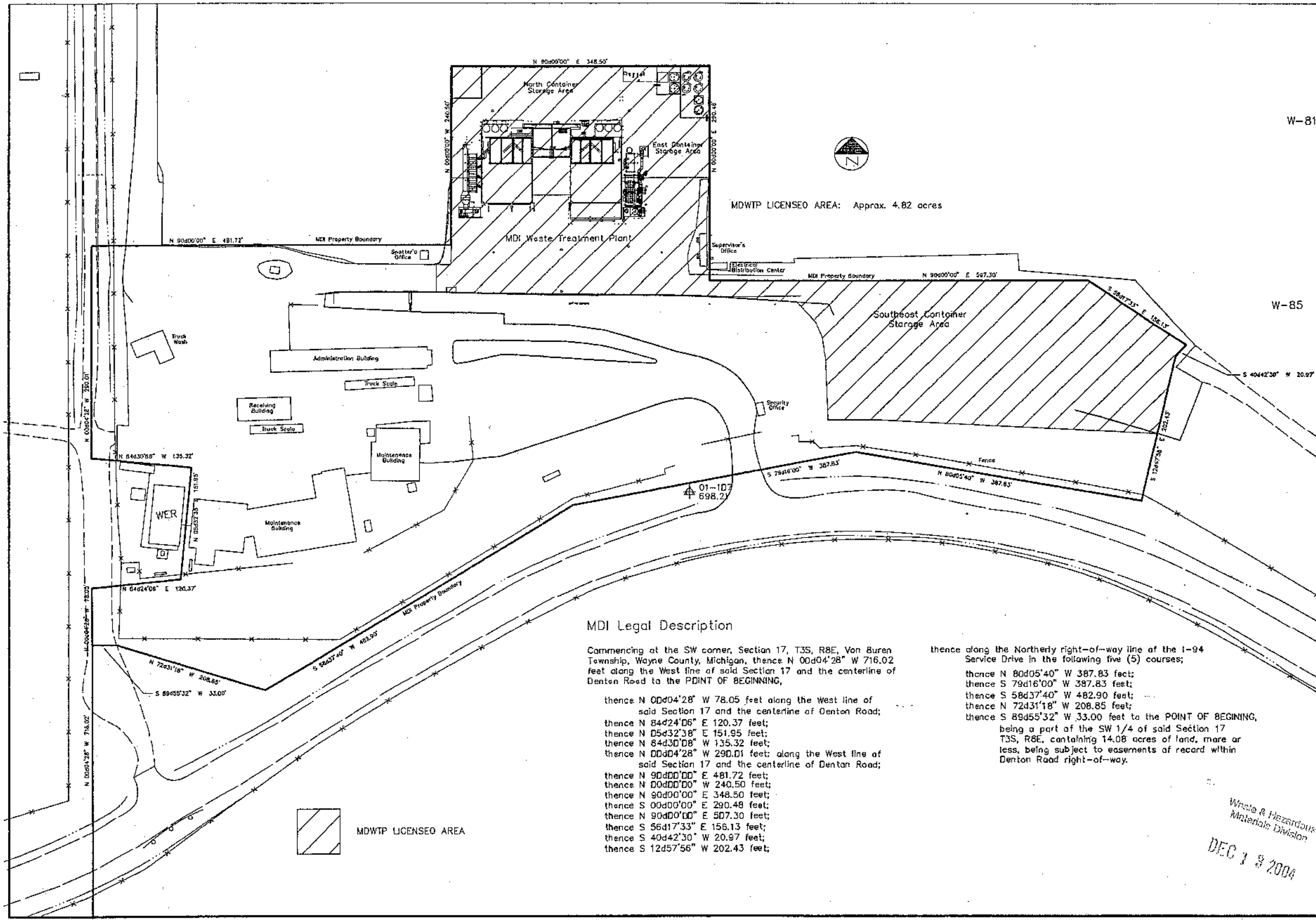
Containerized wastes that are bulked and consolidated in vertical tanks or roll-off boxes are subjected to the same compatibility and waste code evaluations as applied to wastes that are mixed in the treatment tanks as stated the WAP.

K:\CAD\MDI\Regulatory\PLTR9.dwg, 1/24/2006 9:32:38 PM, HP DesignJet 500 42 by



MICHIGAN DISPOSAL WASTE TREATMENT PLANT NORTH CONTAINER STORAGE AREA ENCLOSURE	PROJ. FILE MDI	FILENAME: PIIR9	THE ENVIRONMENTAL QUALITY COMPANY
	DATE: 7/26/00	SCALE: 1" = 30'-0"	
FIGURE FOR ATTACHMENT 7	SHEET ___ OF ___	DRN BY: CAG	

REVISIONS		
A	8/7/00	Submitted to MDEQ
B	6/26/02	As-Built
C		
D		
E		



MDI Legal Description

Commencing at the SW corner, Section 17, T3S, R8E, Van Buren Township, Wayne County, Michigan, thence N 00d04'28" W 716.02 feet along the West line of said Section 17 and the centerline of Denton Road to the POINT OF BEGINNING,

thence N 00d04'28" W 78.05 feet along the West line of said Section 17 and the centerline of Denton Road;
thence N 84d24'06" E 120.37 feet;
thence N 05d32'38" E 151.95 feet;
thence N 84d30'08" W 135.32 feet;
thence N 00d04'28" W 290.01 feet; along the West line of said Section 17 and the centerline of Denton Road;
thence N 90d00'00" E 481.72 feet;
thence N 00d00'00" W 240.50 feet;
thence N 90d00'00" E 348.50 feet;
thence S 00d00'00" E 290.48 feet;
thence N 90d00'00" E 507.30 feet;
thence S 56d17'33" E 156.13 feet;
thence S 40d42'30" W 20.97 feet;
thence S 12d57'56" W 202.43 feet;

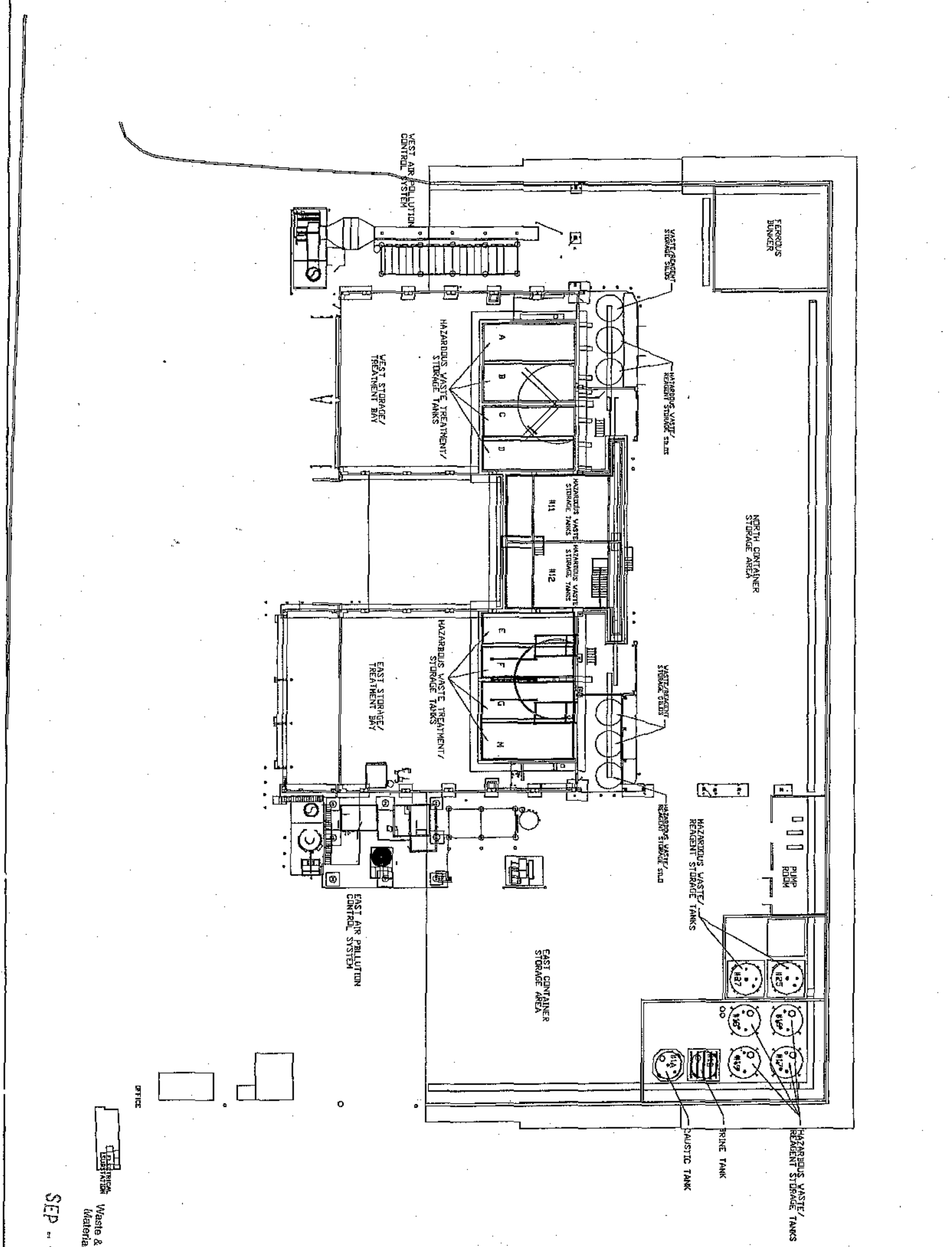
thence along the Northerly right-of-way line of the I-94 Service Drive in the following five (5) courses;
thence N 80d05'40" W 387.83 feet;
thence S 79d16'00" W 387.83 feet;
thence S 58d37'40" W 482.90 feet;
thence N 72d31'18" W 208.85 feet;
thence S 89d55'32" W 33.00 feet to the POINT OF BEGINING, being a part of the SW 1/4 of said Section 17 T3S, R8E, containing 14.08 acres of land, more or less, being subject to easements of record within Denton Road right-of-way.

Waste & Hazardous Materials Division
DEC 1 3 2004

MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE: MDI	FILENAME: PitA00	A00
SURVEYED PROPERTY DESCRIPTION	DATE: 10/29/04	SCALE: 1"=60'	
	SHEET ___ OF ___	DRN BY: CAG	

REVISIONS: A, B, C, D, E

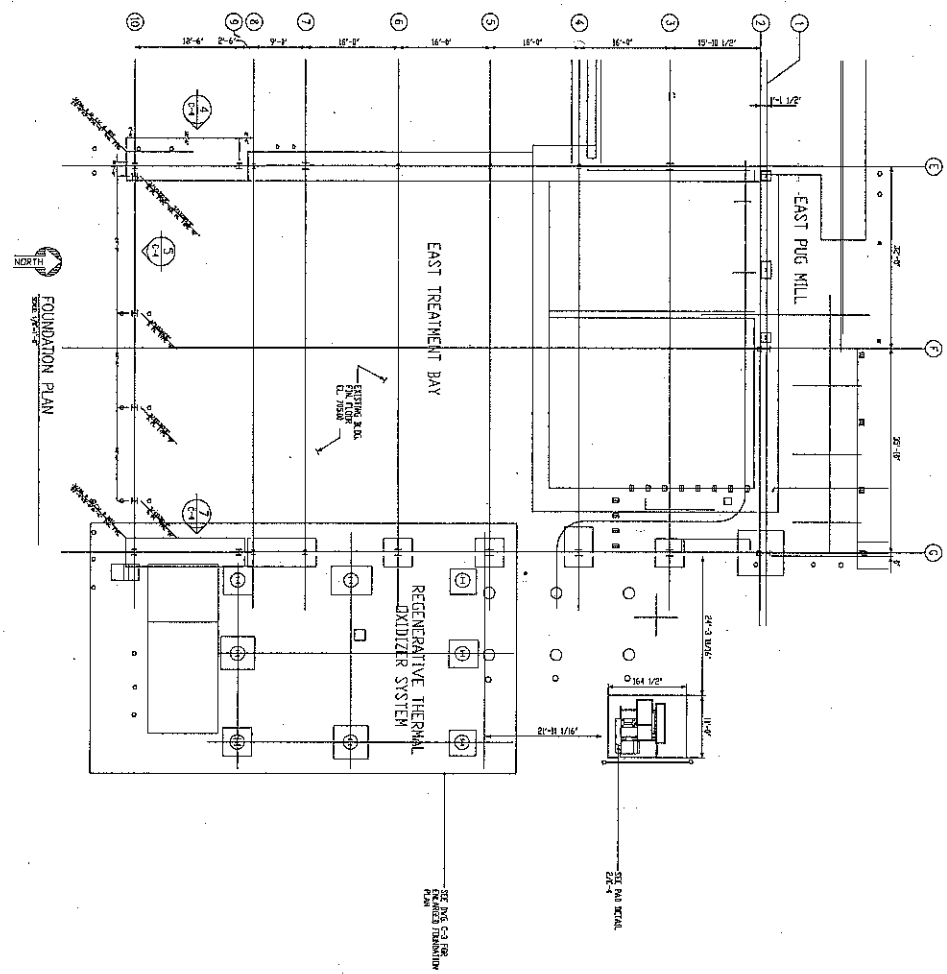
THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



Waste & Hazardous Materials Division
SEP - 7 2005

A0	MICHIGAN DISPOSAL WASTE TREATMENT PLANT ARCHITECTURAL	PROJ. FILE MDI	FILENAME: PLTAD	REVISIONS	A	11/17/02	Concrete Curb Update
		DATE: 10/1/02	SCALE: 1/16"=1'-0"		B	8/22/05	Remove Proposed Capacity From Tank Farm
	FACILITY DRAWING	SHEET ___ OF ___	DRN BY: CAG		C		
					D		
					E		

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



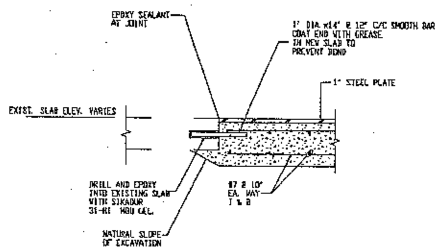
GENERAL NOTES (CONCRETE)

1. GOVERNING CODE: UBC 1997
2. EL. 704'-6" = EXIST. BLDG FINISH FLOOR (U.S.G.S.)
3. SPREAD FOOTING AND SLAB DESIGN ARE BASED ON ALLOWABLE SOIL BEARING CAPACITY OF 4000 PSF. CONTRACTOR SHALL VERIFY THAT NEW CONCRETE IS PLACED ON UNDISTURBED SOIL OR COMPACTED FILL WITH THIS MINIMUM CAPACITY. IF UNSOUND CONDITIONS ARE ENCOUNTERED, ENGINEER/ARCHITECT SHALL BE CONTACTED FOR EVALUATION.
4. CONCRETE AND REINFORCEMENT SHALL BE DETAILED, FABRICATED, INSTALLED, CURED, SAMPLED AND TESTED IN ACCORDANCE WITH LATEST EDITION OF ACI 318 CODE.
5. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. CONCRETE EXPOSED TO FREEZING AND THAWING SHALL BE AIR ENTRAINED WITH TOTAL AIR CONTENT AT TIME OF PLACEMENT EQUAL TO 5+/-1.5 PERCENT.
6. DEFORMED REINFORCEMENT BAR SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A615, GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

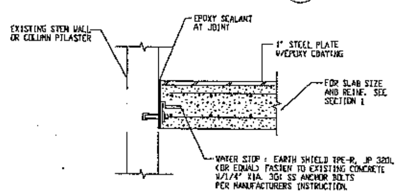
C2	MICHIGAN DISPOSAL WASTE TREATMENT PLANT REGENERATIVE THERMAL OXIDIZER SYSTEM	PROJ. FILE: LIC	FILENAME: PHC2	REVISIONS	A 4/9/98 Issued For Permit B 4/9/98 Issued For Bid C 2/22/00 As Built D E	THE ENVIRONMENTAL QUALITY COMPANY 36255 MICHIGAN AVENUE, WAYNE, MI. 48184 TEL. (734) 329-8000
	OVERALL FOUNDATION PLAN	DATE: 1/31/00 SHEET/B/98#/9/98	SCALE: 1"=10'-0" DRN BY: CAG			

LEGEND

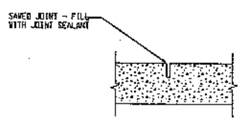
1. RENOVE EXISTING SLAB FBA THE FIRST 20 FEET SOUTH OF THE WASTE TREATMENT AND STORAGE TANKS. PLACE AN 11" CONCRETE SLAB ON GRADE REINFORCEB WITH #7 BARS AT 10" C/C EACH WAY, TOP AND BOTTOM, SEE SECTION 1. A 1" STEEL PLATE SNALL BE PLACED OVER AND FASTENEB TO THE CONCRETE SLAB. USE NON-SHRINK EPOXY FILLER TB FILL GAPS BETWEEN THE STEEL PLATE AND CONCRETE SLAB.
2. THE EXISTING SLAB SLOPES TO THE EAST. THE TOP BF THE STEEL PLATE ON THE NEW SLAB SHALL BE FLUSH WITH THE OLD SLAD (SEE SECTION 1). THE NEW SLAB SHALL BE SLOPEB TO MATCH THE EXISTING SLAB.
3. FASTEN THE STEEL PLATE TO THE CONCRETE WITH 3/4" DROP-IN STEEL ANCHORS ANB 3/4" X 3" FLAT TOP SOCKET HEAD CAP SCREWS. SEE PLAN FOR FASTENER EXPANSION LAYOUT. COUNTER SINK HOLES SO CAP SCREW IS FLUSH WITH FLOOR PLATE. FASTENER SPACINGS ARE APPROXIMATELY.



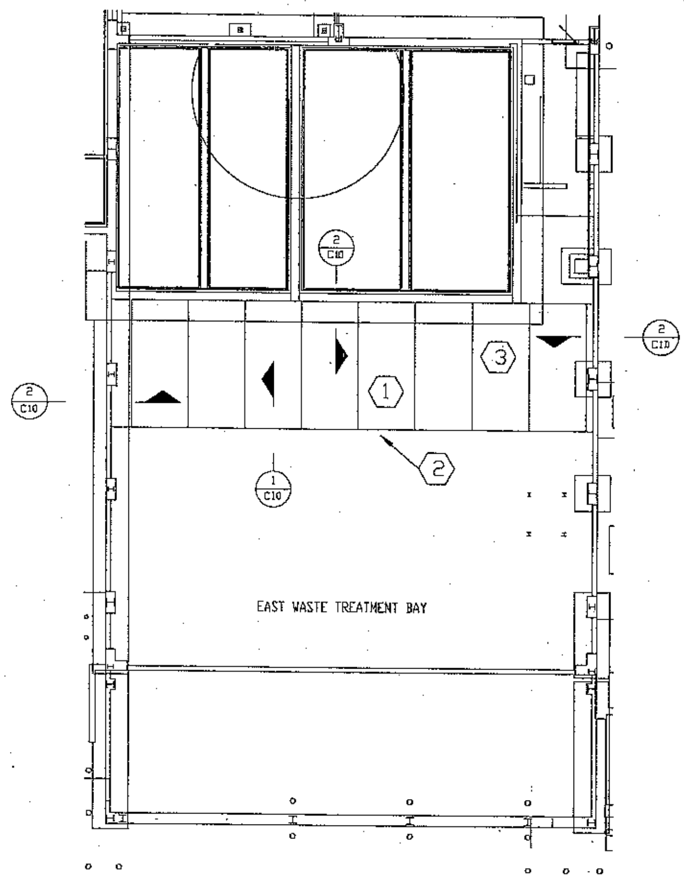
SLAB JOINT AT EXIST. SLAB (1/C10)
SCALE: 1" =1'-0



SLAB AT WALL/PILASTER (2/C10)
SCALE: 1" =1'-0



SLAB CONTROL JOINT (3/C10)
SCALE: 1" =1'-0



MICHIGAN DISPOSAL WASTE TREATMENT PLANT EAST WASTE TREATMENT & STORAGE BAY	PROJ. FILE: LIC	FILENAME: PHC5	REVISIONS: A B C D E
FLOOR REPAIR PROJECT	DATE: 6/15/01	SCALE: 1/8"=1'-0"	
	SHEET __ OF __	DRN BY: CAG	

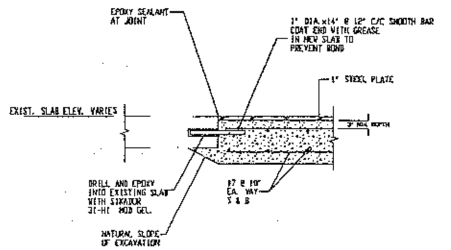
C5

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

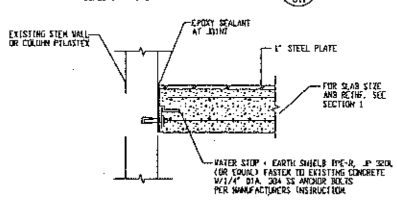
LEGEND

1. REMOVE EXISTING SLAB FOR THE FIRST 20 FEET SOUTH OF THE WASTE TREATMENT AND STORATE TANKS. PLACE AN 11" CONCRETE SLAB ON GRADE REINFORCED WITH #7 BARS AT 10" C/C EACH WAY, TOP AND BOTTOM, SEE SECTION 1. A 1" STEEL PLATE SHALL BE PLACED OVER AND FASTENED TO THE CONCRETE SLAB. USE NON-SHRINK EPOXY FILLER TO FILL GAPS BETWEEN THE STEEL PLATE AND CONCRETE SLAB.
2. THE EXISTING SLAB SLOPES TO THE EAST. THE TOP OF THE STEEL PLATE ON THE NEW SLAB SHALL BE FLUSH WITH THE OLD SLAB (SEE SECTION 1). THE NEW SLAB SHALL BE SLOPED TO MATCH THE EXISTING SLAB.
3. FASTEN THE STEEL PLATE TO THE CONCRETE WITH 3/4" DROP-IN STEEL ANCHORS AND 3/4" X 3" FLAT TOP SOCKET HEAD CAP SCREWS. SEE PLAN FOR FASTENER EXPANSION LAYOUT. COUNTER SINK HOLES SO CAP SCREW IS FLUSH WITH FLOOR PLATE. FASTENER SPACINGS ARE APPROXIMATELY.
4. SAW CUT CRANE BASE TO 13 INCHES AND BREAK OUT CONCRETE TO NOT LESS THAN 2" BELOW CONCRETE SLAB GRADE. COVER WITH 2" OF SAND.

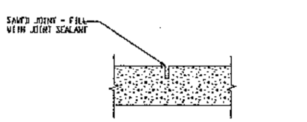
Mark	Quantity	Material	Length (Feet)	Length (Inches)
	9	A36 - 1" PLT	23	-
	148	3/4" DROP-IN ANCHORS		
	140	3/4" CAP SCREWS		3"
		EARTH SHIELD TPE-R, JP 320L	215'	
	215	1" ROUND BAR STOCK	1	2"



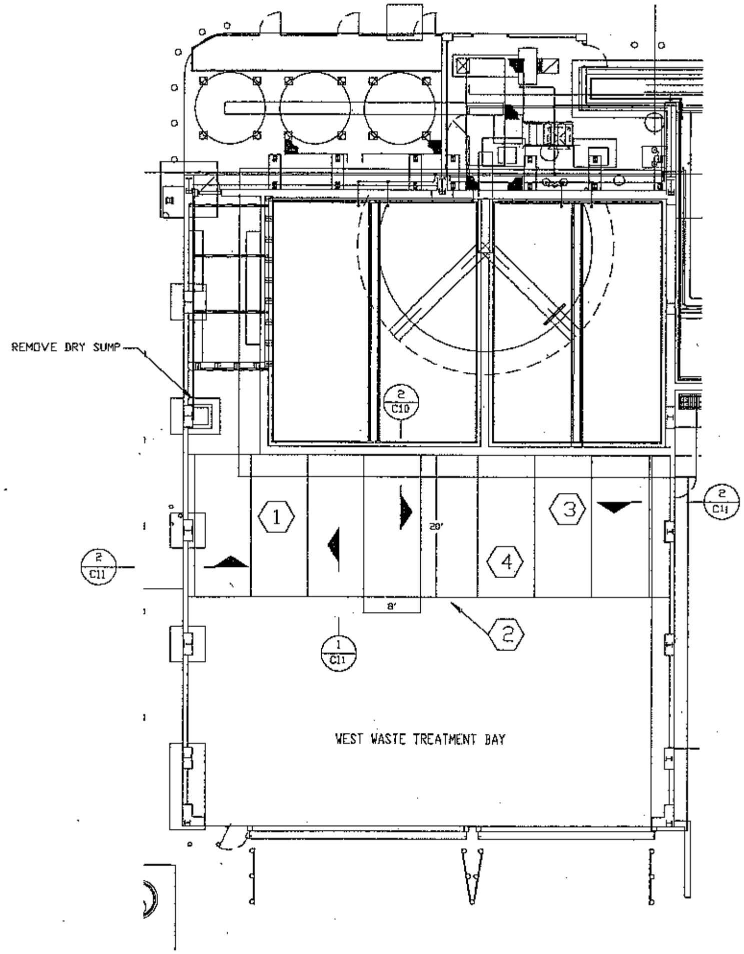
SLAB JOINT AT EXIST. SLAB (1/C11)
SCALE: 1" =1'-0

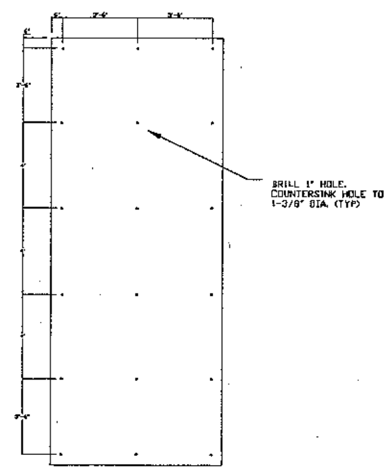


SLAB AT WALL/PILASTER (2/C11)
SCALE: 1" =1'-0



SLAB CONTROL JOINT (3/C11)
SCALE: 1" =1'-0



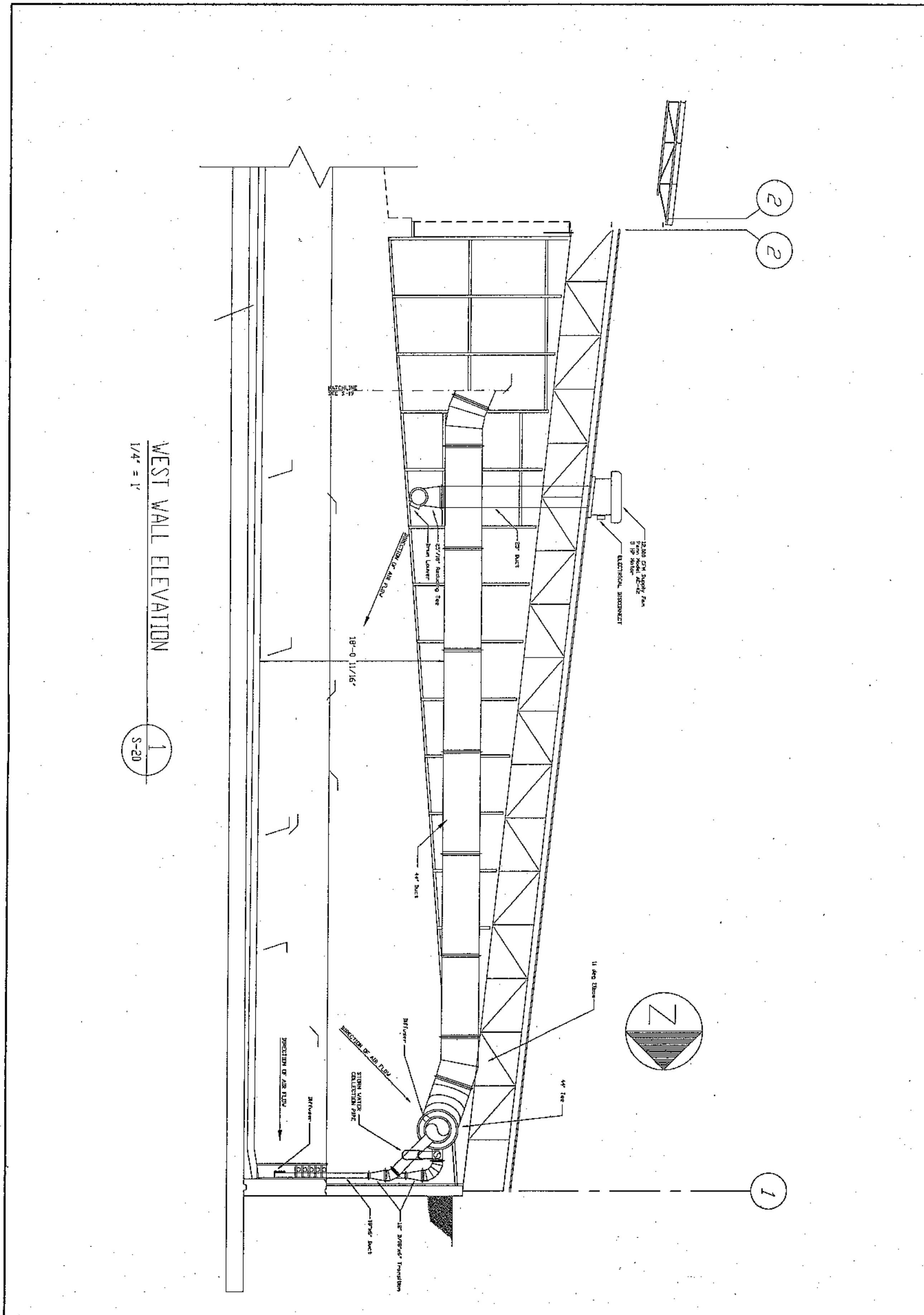


FLOOR PLATE (4/C11)
SCALE 3/8" = 1'

MICHIGAN DISPOSAL WASTE TREATMENT PLANT WEST WASTE TREATMENT & STORAGE BAY	PROJ. FILE: LIC	FILENAME: PIIC6	REVISIONS: A, B, C, D, E
FLOOR REPLACEMENT PROJECT	DATE: 8/15/01	SCALE: 1/8"=1'-0"	
	SHEET ___ OF ___	DRN BY: CAG	

THE ENVIRONMENTAL QUALITY COMPANY
38255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000

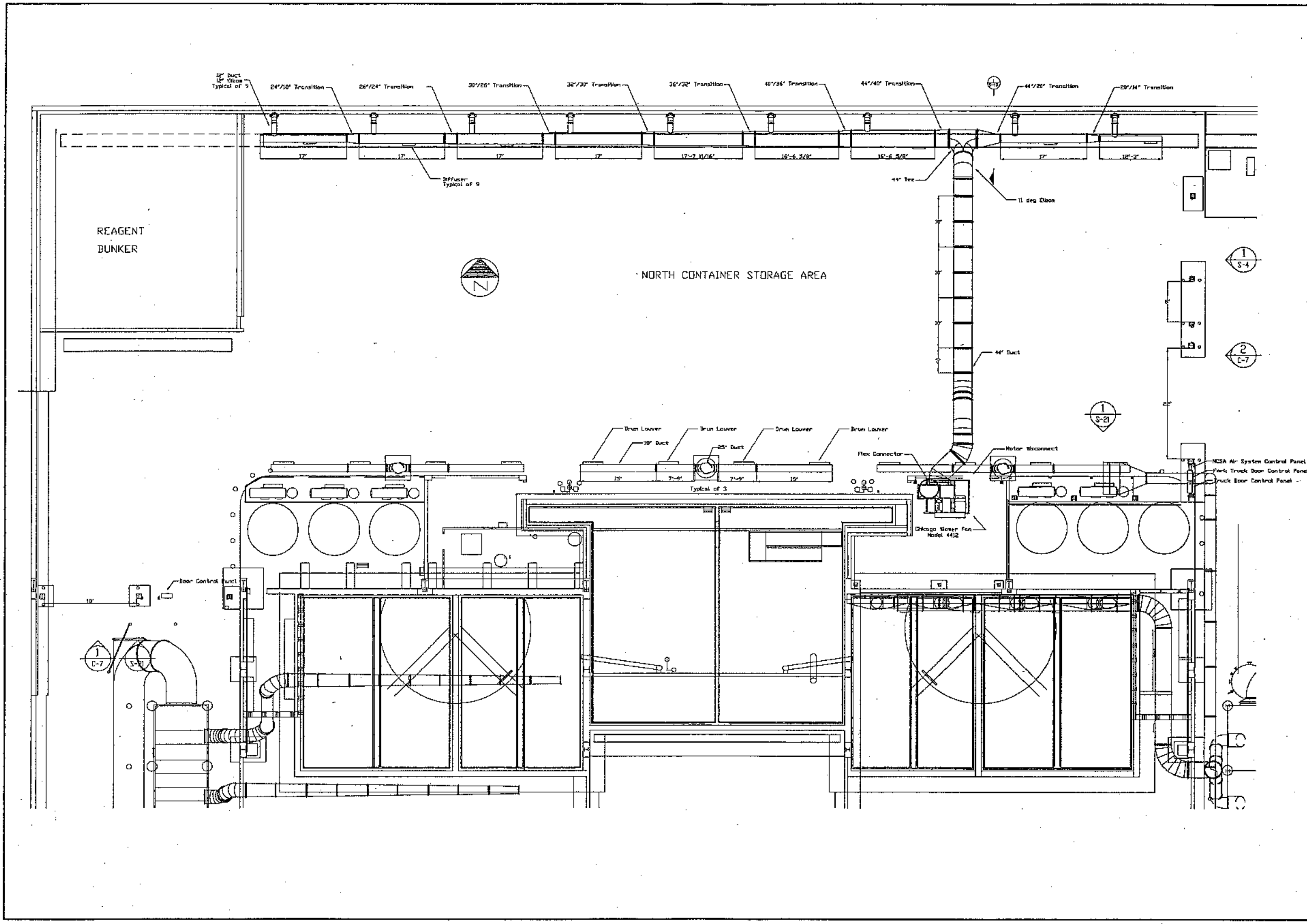
C6



S19	MICHIGAN DISPOSAL WASTE TREATMENT PLANT NORTH CONTAINER STORAGE AREA	PROJ. FILE MDI	FILENAME: PHS19	
	VENTILATION DUCT ELEVATION	DATE: 7/20/00	SCALE: 1/4"=1'-0"	
		SHEET ___ OF ___	DRN BY: CAG	

REVISIONS	Date	Description
A	8/8/00	Submitted To MDEQ
B	5/8/01	Fan Location Revision
C	8/3/02	As-Built
D		
E		

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL (734) 329-8000



A	8/7/00	Submitted To MDEQ	
B	5/0/01	Fee Location Revision	
C	6/3/02	As-Built	
D			
E			

REVISIONS

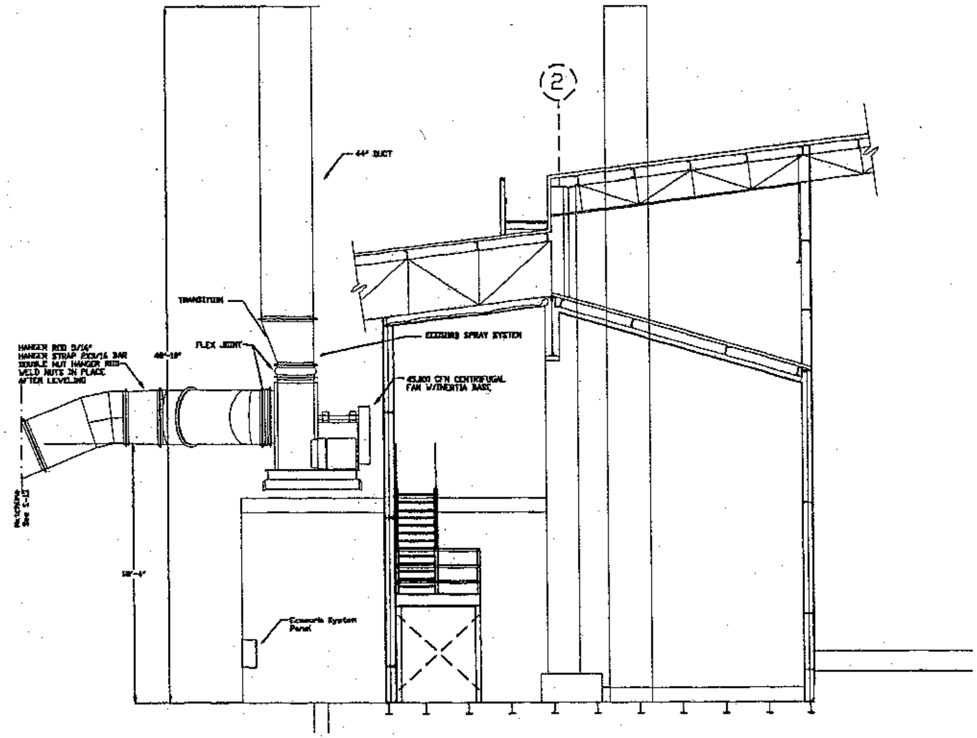
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
NORTH CONTAINER STORAGE AREA

VENTILATION DUCT PLAN VIEW

PROJ. FILE: MDI
FILENAME: PIIS20
DATE: 7/28/00
SCALE: 1/8"=1'-0"
SHEET ___ OF ___
DRN BY: CAG

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

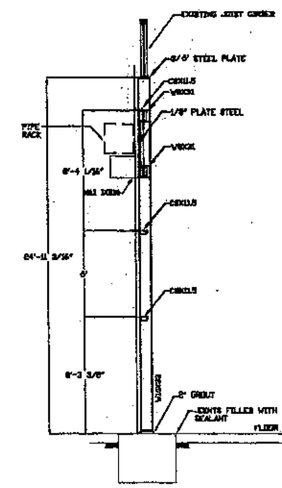
S20



Exhaust Fan Elevation

1/4" = 1'

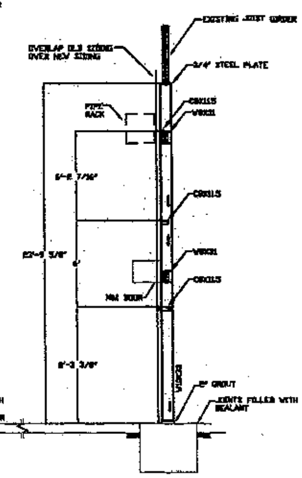
1 / S-20



TRUCK DOOR ELEVATION

1/4" = 1'

2 / C-7



FORK TRUCK DOOR ELEVATION

1/4" = 1'

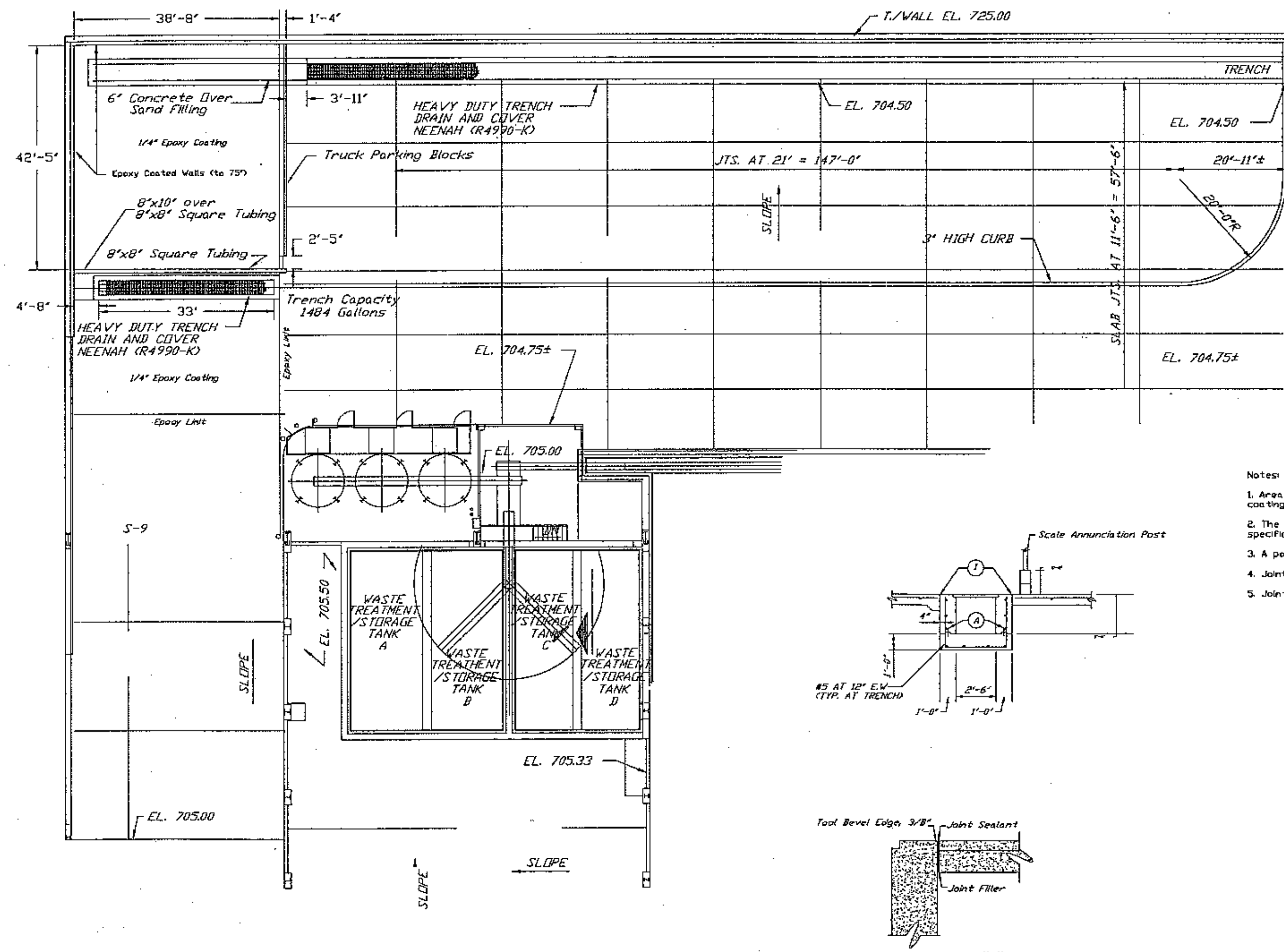
3 / C-7

NOTES:

1. EXHAUST DUCT (GREATER THAN 36" DIA) IS #14 GUAGE GALV. STEEL WITH 1 1/4X1 1/4 X 3/16" ANGLE EVERY 8 FEET. THE DUCT IS RATED FOR 14 INCHES WATER COLUMN VACUUM, CLASS 2. EXHAUST DUCT (LESS THAN 36" DIA) IS #16 GAUGE GALV. STEEL. THE DUCT IS RATED FOR 14 INCHES WATER COLUMN VACUUM DUCT (< 36" Dia) SHALL BE #16 GUAGE GALV. VACUUM, CLASS 2.
2. SUPPLY DUCT IS 18 GUAGE GALV. STEEL. THE DUCT IS RATED FOR 6 INCHES WATER COLUMN PRESSURE, CLASS 2.
3. ALL DUCT CONFORMS TO 1980 EDITION SMACNA STANDARDS MANUAL.

MICHIGAN DISPOSAL WASTE TREATMENT PLANT NORTH CONTAINER STORAGE AREA	PROJ. FILE: MDI	FILENAME: PHS23	REVISIONS	THE ENVIRONMENTAL QUALITY COMPANY 38250 MICHIGAN AVENUE, WAYNE, MI 48184 TEL (734) 329-8000
VENTILATION FAN ELEVATION	DATE: 7/25/00	SCALE: 1"=8'		
S23	SHEET ___ OF ___	DRN BY: CAG		

Rev	Date	Description
A	8/7/00	Submitted To MDEQ
B	5/8/01	Footing Detail Revision
C	8/3/05	As-Built
D		
E		



Type "I"

Notes:

1. Area around and in trench will be coated with 1/4" thick epoxy coating. The Epoxy coating will be Master Builders APS 2041 System.
2. The epoxy area surface will be prepared to manufacturer's specifications. All cracks will be routed and prefilled.
3. A polymeric primer will be installed before epoxy coating.
4. Joint sealant will be epoxy type.
5. Joint filling will be urethane injection resin.

MICHIGAN DISPOSAL WASTE TREATMENT PLANT NORTH CONTAINER STORAGE AREA	PROJ. FILE LIC	FILENAME: PHM26	REVISIONS A B C D E
FERRDUS SULFATE BUNKER	DATE: 12/21/99 SHEET ___ OF ___	SCALE: 1"=15'-0" DRN BY: CAG	

THE ENVIRONMENTAL QUALITY COMPANY
36053 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 320-8080

M26

Xypex Material Overview

Xypex is a non-toxic, chemical treatment for the waterproofing and protection of concreta. Xypex's primary and most distinguishing performance feature is its unique ability to generate a non-soluble crystalline formation deep within the pores and capillary tracts of the concrete - a crystalline structure that permanently seals the concrete against the penetration of watwr and other liquids from any direction.

A major independent testing laboratory performed concrete waterproofing tests on Xypex in accordance with Army Corps Permeability Specification CRD E48-73. The results showed that a two coat application of Xypex on two inch thick 2000 PSI porous concrete totally eliminates leakage at pressures of at least 405 feet of head pressure.

The Xypex chemical reactions that initially take place at the concrete surface or immediately adjacent area, will continue deep into the concrete structure. Independent testing measured the depth of Xypex crystalline penetration into a cast-in-place concrete block at 12 inches. The test concrete sample was coated on the top surface with Xypex Concentrate and left outside the research laboratory in ambient conditions for 12 months.

A Xypex application, unlike most other systems, is permanent. Its unique, dendritic crystalline growth will not deteriorate under normal conditions.

Based on independent testing according to ASTM C 267-77 'Chemical Resistance of Mortars', Xypex in not affected by a wide range of aggressivw chemicals including mild acids, solvents, chlorides, and caustic materials. Because Xypex is pH specific (not chemical specific) it will protect concrete from any chemical whose pH range is 3.0 to 11.0 constant contact, or 2.0 to 12.0 periodic contact.

Xypex Application

Weater and Concrete Conditions:
The Xypex treatment must not be applied under rainy conditions or when ambient temperature is below 40 F.

The concrete surface must be a minimum of 20 hours old before application of the Xypex coating. For fresh concrete, the period between 24 hours and 72 hours is the optimum time within which to apply Xypex, as the new concrete is still 'green' and requires very little pre-watering.

Preparation:
Concrete surfaces to receive waterproofing treatment shall have an open capillary system to provide tooth and suction, and shall be free from scale, excess form oil, laitance, curing compounds and foreign material.

Surfaces shall be waterblasted as necessary to provide a clean absorbent surface.

Cracks: Chip out defective areas in a 'U' shaped slot one inch wide and a minimum of one inch deep. Clean slot of debris and dust. Soak area with water and remove excess surface water. Apply a slurry coat of Xypew Concentratw at the rate of 1.5 lb/sq. yd. to the slot. Allow slurry to reach an initial set, then fill cavity with Dry-Pac. Compress tightly into cavity using pneumatic packer or block and hammer.

DryPac Mixing: Using a trowel, mix one part clean water with six parts Xypex Concentrate powder by volume for 10 to 15 seconds. Lumps should be present in this mixture. Do not mix more than can be applied in 20 minutes.

Other Concrete Defects: Rout out defective areas to sound concrete. Remove loose materials and saturate with water. Remove excess surface water and apply a slurry coat of Xypex Concentrate to area. After slurry has set, but while still 'green', fill cavity to surface level with non-shrink grout.
Wetting Concrete: Prior to application of waterproofing treatment, throughly saturate concrete surfaces with clean water as required to ensure migration of crystalline chemicals into voids and capillary tracts of the concrete. Remove free surface water before application.

Application:
After repairs, surface preparations, and treatment of joints have been completed in accordance with specifications, apply Xypex treatment at the rate of 1.5 lb/sq. yd. uniformly to concrete surfaces with semi-stiff broom, or suitable spray equipment to a thickness of 0.0625 inches. A thicker coating can cause difficulties, especially in warm weather. When brushing, work slurry well into surface of the concrete, filling surface pores and hairline cracks. When spraying, hold nozzle close enough to ensure that slurry is forced into pores and hairline cracks.
Second Coat: A second coat should be applied after the first coat has reached an initial set but while it is still 'green' (less than 48 hours). Light pre-watering between coats may be required due to drying. The second coat shall be applied at the rate of 1.25 lb/sq. yd. uniformly to a thickness of 0.0625 inches.

Curing:
Begin curing as soon as Xypex coating has hardened sufficiently so as not to be damaged by a fine spray. Cure Xypex treatment with a mist fog spray of clean water three times a day for 3 days, or cover treated surfaces with damp burlap for 3 days. At high temperatures, more than three sprayings may be necessary to prevent excessive drying of coating.

Protection: During the curing period, the coating must be protected from rainfall, frost, wind, the puddling of water and temperatures below 36 F for a period of not less than 48 hours after application. If plastic sheeting is used as protection, it must be raised off the Xypex to allow the coating to breathe.

Drying: After curing, the coating will be allowed to dry without any heavy vehicle traffic for a period of 3 days. After three days, a film of Xypex Quick Set Hardner will be applied. Surface is then ready for use.

Concrete Repair At Slab Joints

Preparation:

EMACO T415 repair mortar is based on new high performance cement technology resulting in high early strengths at a wide range of temperatures EMACO T415 is resistant to damage caused by freeze/thaw cycles.

Preparation:
Make a 1-1/2 inch deep sawcut around the perimeter of the patch. The concrete in this area will be removed by pneumatic tools until a sound surface is found. When removing the concrete, the pneumatic hammer should not exceed 30 lbs., to keep from fracturing the concrete and ultimately having a compression failure below the patch.
The patch area should then be cleaned using water blasting to remove any loose or foreign materials. It is important that the surface is completely clean so that the patch will adhere to it.
Apply clean water to the patch surface to maintain a saturated, surface dry condition.

Application:

Mixture: Mix Emaco T415 with the required amount of water and 55% of 3/8" aggregate.

Bond Scrub Coat. Apply a bond scrub coat of repair mortar on properly prepared substrate. Throughly scrub mix Emaco T415 into the cleaned, saturated surface with a stiff-bristled brush. Apply scrub coat at a rate that will not dry before placement of repair mortar. Do not retemper slurry material if it begins to set.

Patch: Apply Emaco T415 from one side to the other. Work material firmly into the bottom and sides of the patch to assure a good bond.

Curing:

Wet cure for one day by either applying MasterKure 200W in accordance with label instructions or by use of sheeting material, wet burlap or fog spray.

Joint Repair:

Saw Cut: Saw cut joint to a depth of 1 inch.

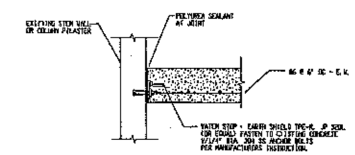
Concrete Joint/Crack Repair

Material:
Polyurea is a two component, pourable, self-leveling hybrid material designed for use as a joint sealer for interior warehouse/industrial floors subject to heavy forklift traffic and loads.

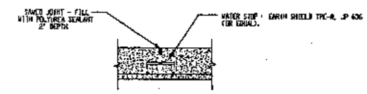
Good chemical resistance.

Crack Preparation:
Rout cracks out to a depth of 1 inch. Blow dust out of crack with oil-free compressed air.

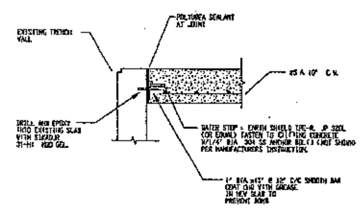
Sealant Application:
Material may be poured into joint out of the mixing container. Fill joints to full depth. Because of polyurea's short pot life, two component pumps or 'quick mix' cartridges are highly recommended.



SLAB AT WALL/PILASTER
SCALE: N.T.S.
1 / C9



SLAB CONTROL JOINT
SCALE: N.T.S.
2 / C9



SLAB AT TRENCH
SCALE: N.T.S.
3 / C9

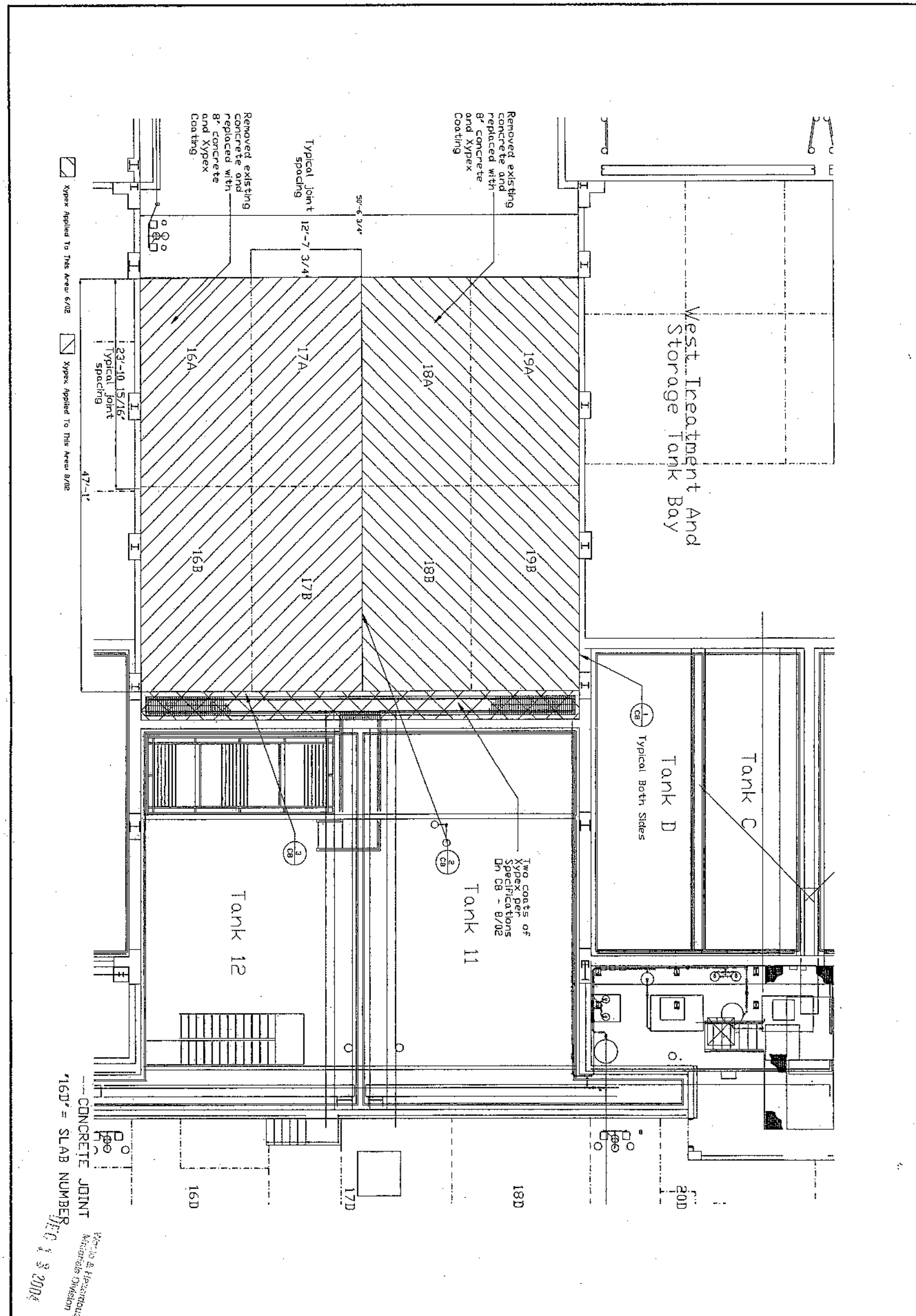
Waste & Hazardous Materials Division
DEC 1 3 2004

MICHIGAN DISPOSAL WASTE TREATMENT PLANT PLANT CONCRETE AREA	PROJ. FILE: PIt
COATING AND REPAIR SPECIFICATIONSS	DATE: 3/11/02
FILENAME: PLTC8	SCALE: NONE
SHEET ___ OF ___	DRN BY: CAG

REVISIONS: A B C D E

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000

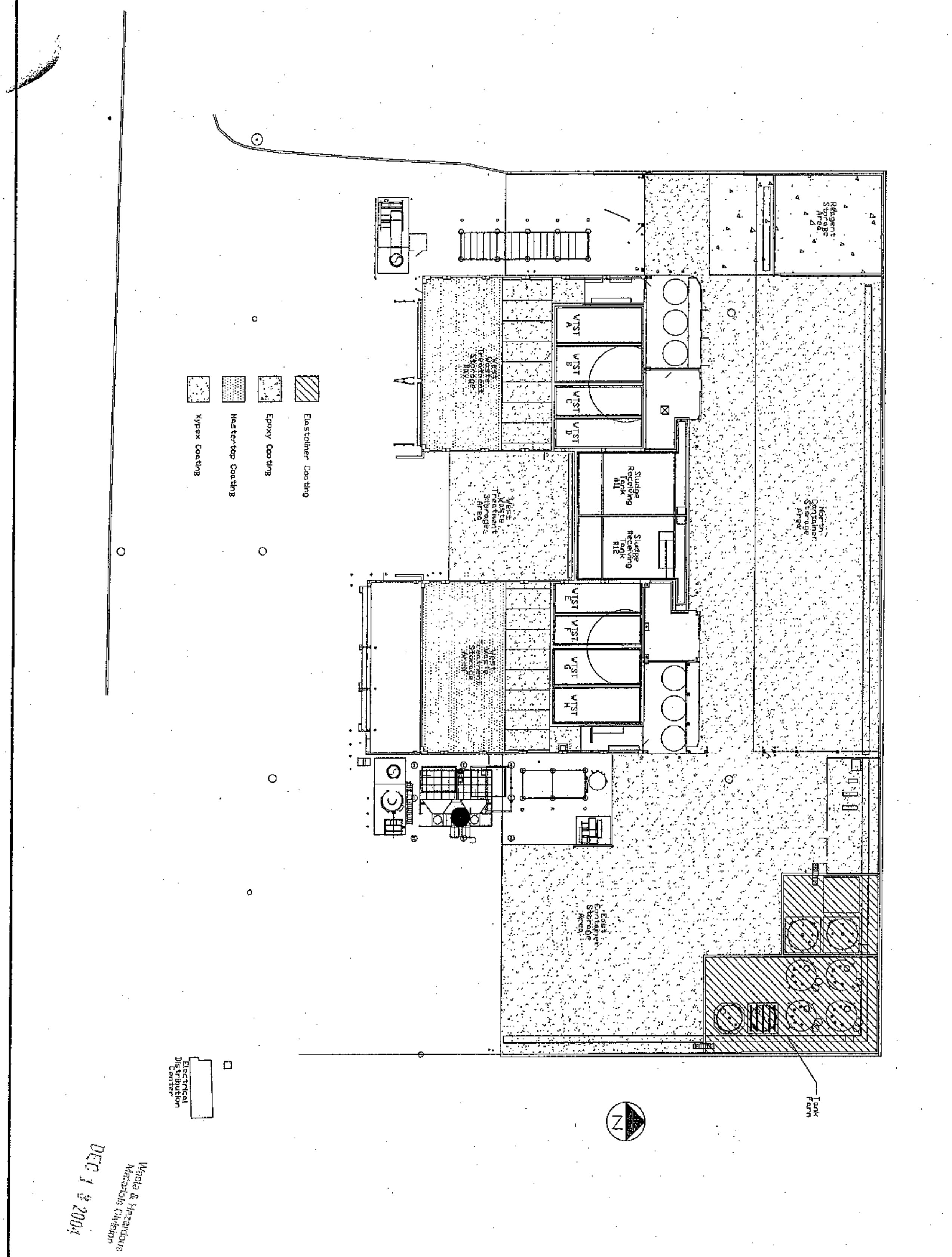
C8



C9	MICHIGAN DISPOSAL WASTE TREATMENT PLANT TANKS 11 AND 12	PROJ. FILE: Plt DATE: 7/3/00 SHEET ___ OF ___	FILENAME: PHC9 SCALE: 1"=5' DRN BY: CAG
	CONCRETE INSTALLATION SPECIFICATIONS		

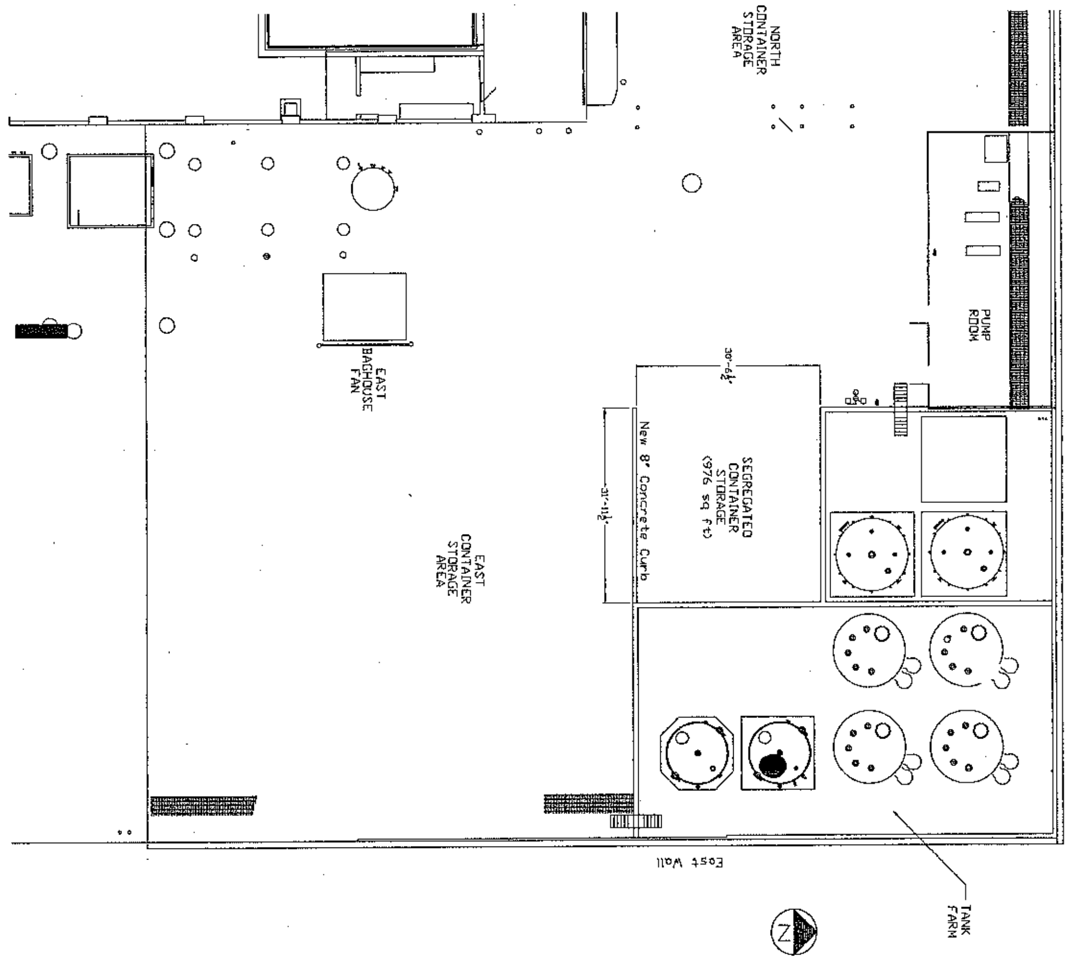
REVISIONS: A, B, C, D, E

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL (734) 329-8000



C10	MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE MDI	FILENAME: PHC10	REVISIONS A B C D E
		DATE: 12/4/04	SCALE: 1"=18'	
	IMPERVIOUS COATING LOCATIONS	SHEET ___ OF ___	DRN BY: CAG	

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000

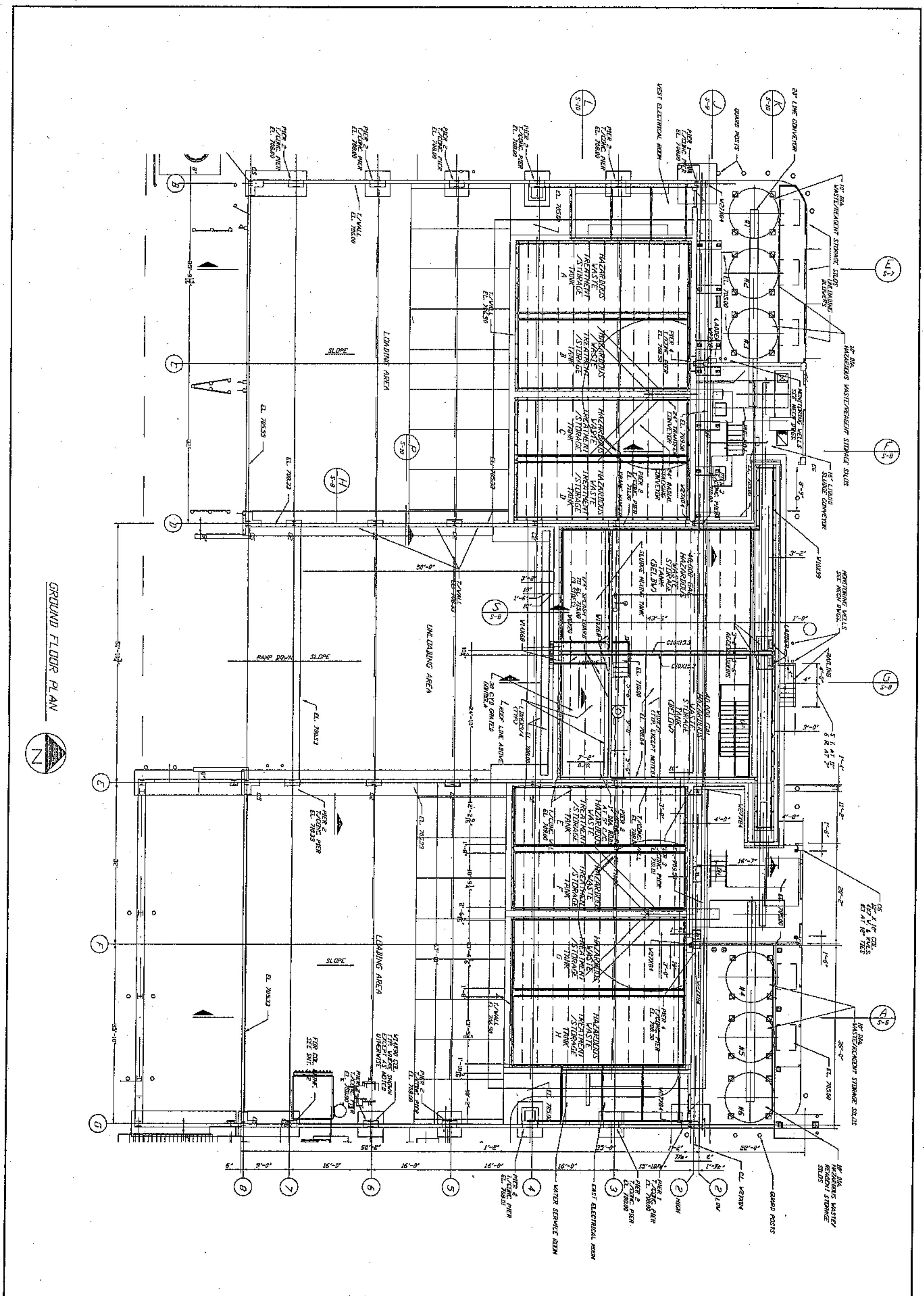


Waste & Hazardous Materials Division
DEC 1 3 2004

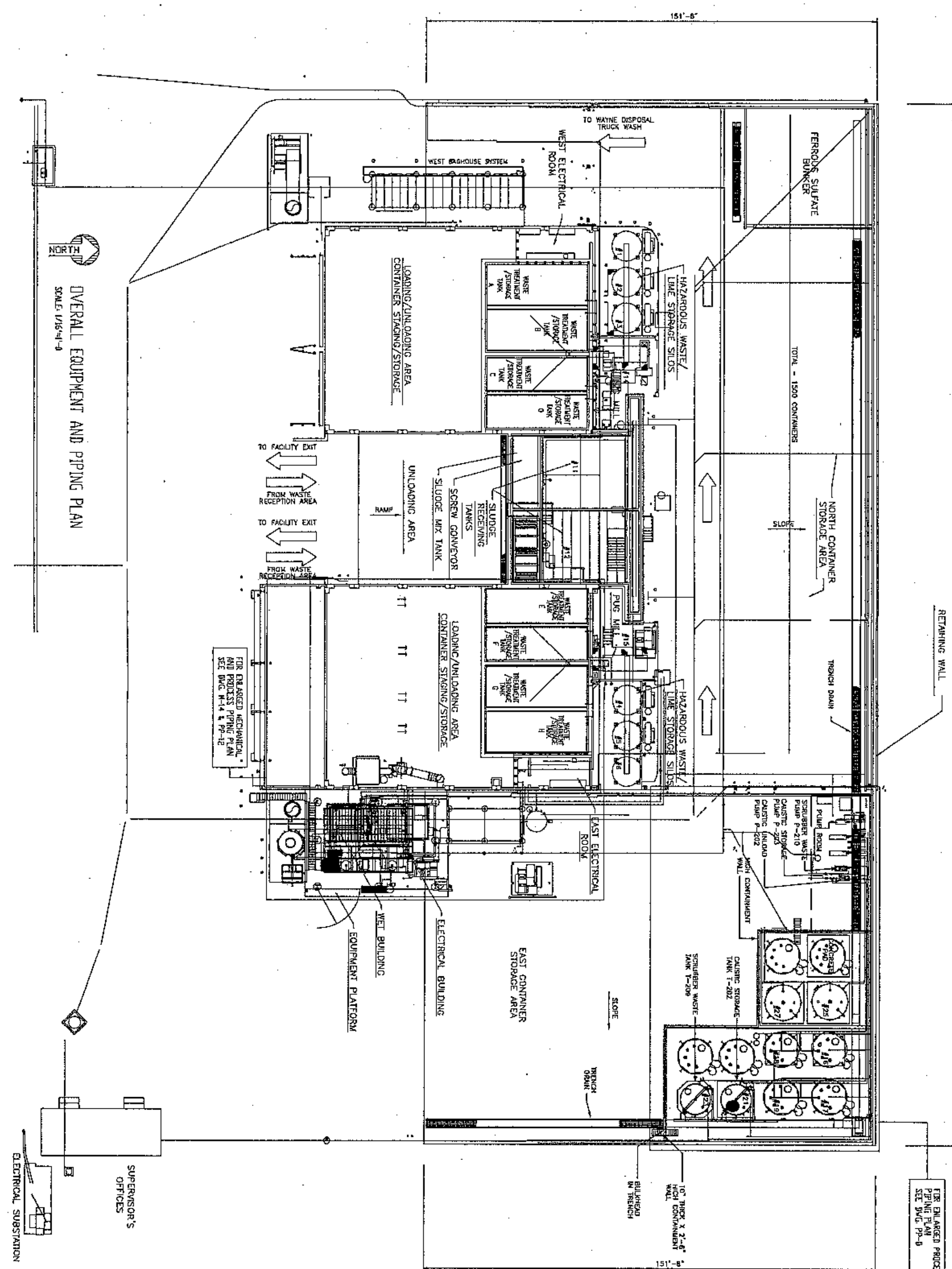
C11	MICHIGAN DISPOSAL WASTE TREATMENT PLANT EAST CONTAINER STORAGE AREA	PROJ. FILE MDI	FILENAME: PltC11
		DATE: 12/4/04	SCALE: 1"=10'
	SEGREGATED CONTAINER STORAGE AREA	SHEET ___ OF ___	DRN BY: CAG

REVISIONS A B C D E

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

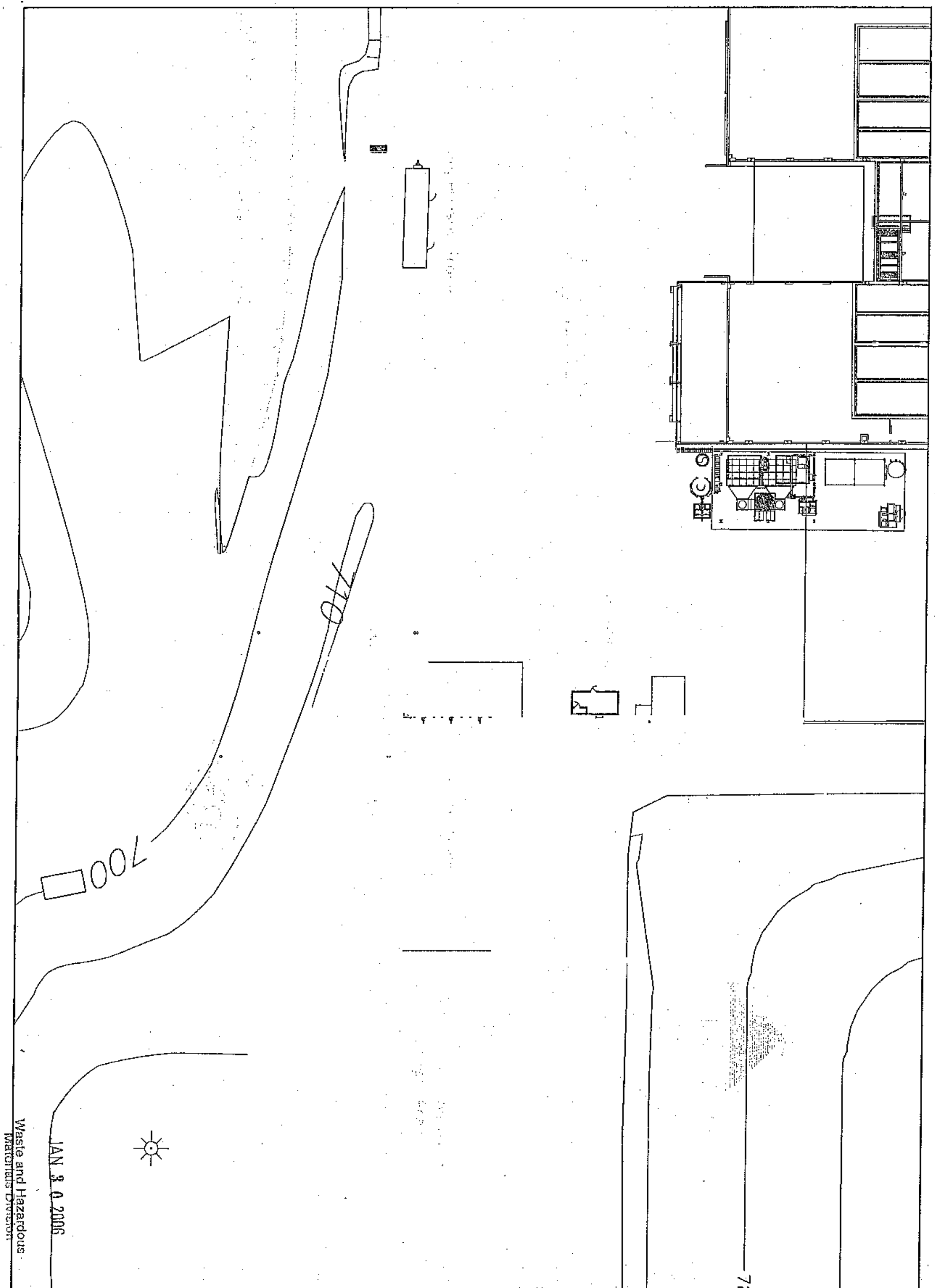


S3	MICHIGAN DISPOSAL WASTE TREATMENT PLANT STRUCTURAL	PROJ. FILE Plant	FILENAME PltS3	REVISIONS A 8/19/02 Relabel Silos	THE ENVIRONMENTAL QUALITY COMPANY
	GROUND FLOOR PLAN	DATE: 8/19/02 SHEET __ OF __	SCALE: 1/8" = 1' DRN BY: CAG		36255 MICHIGAN AVENUE, WAYNE, MI 48184 TEL. (734) 329-8000



MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE: LIC	FILENAME: PIIPP10	REVISIONS: a 4/20/00 Issued For Bid; b 2/24/00 As Built; c; d; e	THE ENVIRONMENTAL QUALITY COMPANY
OVERALL EQUIPMENT AND PIPING PLAN	DATE: 2/11/00	SCALE: 1/16"=1'-0"		36255 MICHIGAN AVENUE, WAYNE, MI. 48184 TEL. (734) 329-8000
	SHEET ___ OF ___	DRN BY: CAO		

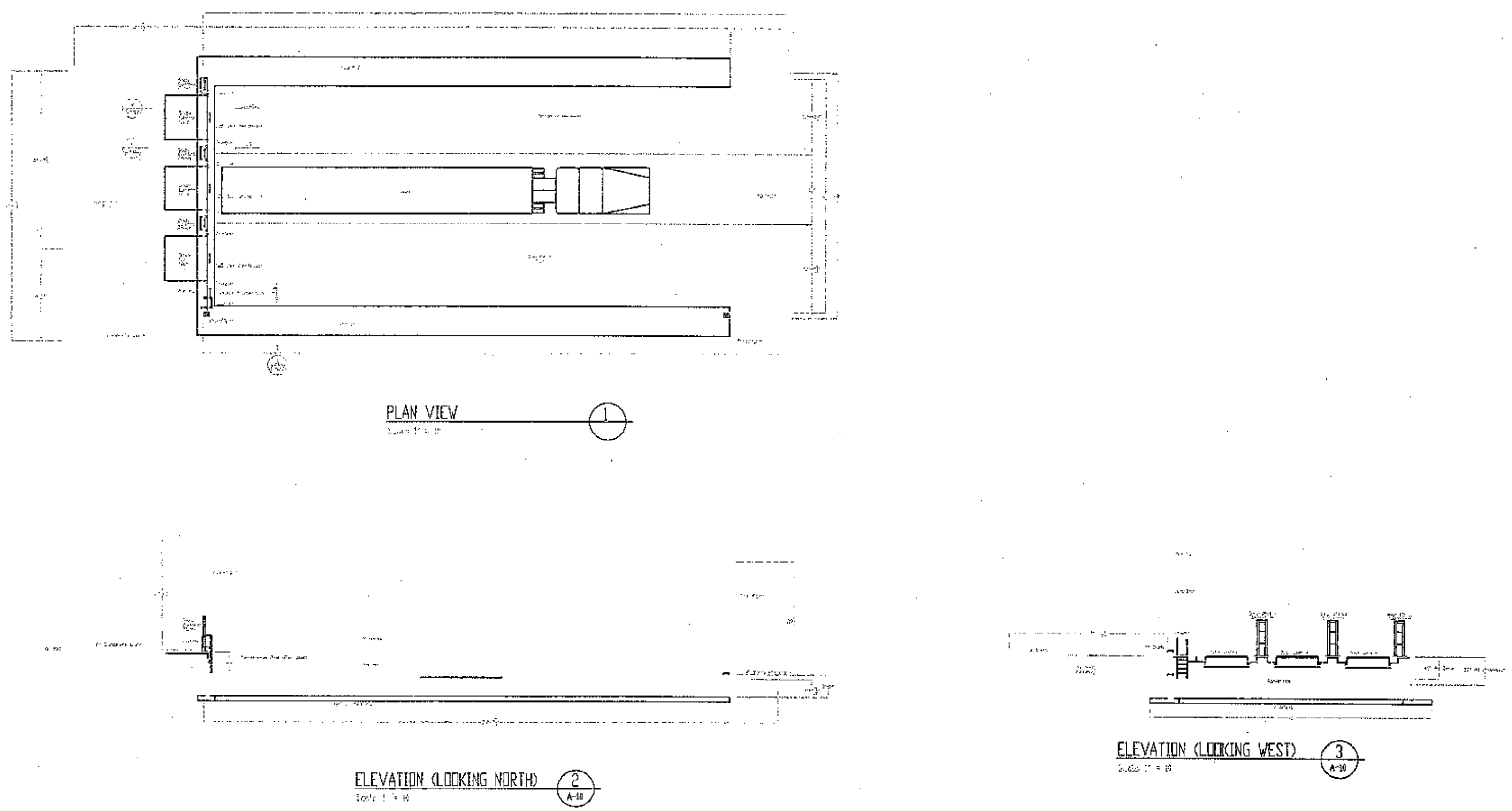
PP10



A10	MICHIGAN DISPOSAL WASTE TREATMENT PLANT MICHIGAN DISPOSAL	PROJ. FILE: MDI	FILENAME: PHA10
	OVERVIEW OF TRUCK DOCK PROJECT	DATE: 1/23/06	SCALE: 1"=40'-0"
		SHEET ___ OF ___	DRN BY: CAC

REVISIONS: a b c d e

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



JAN 3 0 2006

K:\CAD\MDI\License Set\Upcoming License Set\PltA11.dwg, 1/25/2006 6:29:02 PM, HP DesignJet 500 42 by HP

Materials Division

MICHIGAN DISPOSAL WASTE TREATMENT PLANT TRUCK DOCK	PROJ. FILE MDI	FILENAME: PltA11	A 11/13/04 Update rebar
	DATE: 8/30/04	SCALE: 1"=20'-0"	B 1/23/06 As-built
PLAN & ELEVATION VIEW	SHEET ___ OF ___	DRN BY: CAG	REVISIONS

A11

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

ATTACHMENT 8

ACCEPTABLE WASTE TYPES

APPENDIX A

MDWTP - MID 000724831
Waste Types Acceptable for Storage, Treatment &/or Transshipment

Special Notes Regarding Permitted Waste Types (see Section 3.7)

The following Waste Code List includes all United States Environmental Protection Agency (USEPA) and Michigan Department of Environmental Quality (MDEQ) hazardous waste codes, with the following exceptions:

Ignitability –
Waste accepted for Treatment - Flash point of all wastes shall be > (greater than) = 90 °F.

Waste accepted for Storage and Transshipment - Flash point of all wastes shall be > (greater than), < (less than), or = 90 °F. Containers accepted at MDWTP for transshipment are uniquely marked so that they can easily visually identified as a transship waste stream.

Reactive wastes - (D003, K027, K044, K047, K161, and K045)
D003 (deactivated) waste may be accepted for storage, treatment and/or transshipment. These D003 deactivated waste (that may retain the code) will only be received as certified treatment residues, contaminated soil, contaminated debris, or spill residues that do not exhibit the characteristic of reactivity.

Reactive wastes may be received for storage and subsequently transshipped.

Dioxin-containing wastes - (F020-F023, F026-F028, K043, and K099)
Dioxin-containing wastes shall not be accepted.

P-codes and U-codes
P and U-coded wastes may be treated at the MDWTP if they can be successfully treated by the MDWTP processes. If they cannot be successfully treated by MDWTP, the P and U-coded wastes may be received for storage prior to transshipment to another TSDF facility.

LDR –
Any waste codes that have a Land Disposal Restriction (LDR) technology-based treatment standard, other than Deactivation (DEACT), Chemical Reduction (CHRED), Chemical Oxidation (CHOXD), or Stabilization (STABL) cannot currently be treated by the facility, except as certified treatment residues. Hazardous waste debris may be treated as a waste stream or by micro-encapsulation or macro-encapsulation.

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
D001	Ignitable liquids based on 261.21(a)(1)-Wastewaters	(I)	
D001	Ignitable liquids based on 261.21(a)(1) - Low TOC Ignitable Liquids Subcategory - Less than 10% total organic carbon	(I)	
D001	Ignitable compressed gases based on 261.21(a)(3)	(I)	
D001	Ignitable reactives based on 261.21(a)(2)	(I)	
D001	Oxidizers based on 261.21(a)(4)	(I)	
D002	Acid Subcategory based on 261.22(a)(1)	(C)	
D002	Alkaline Subcategory based on 261.22 (a) (1)	(C)	
D002	Other corrosives based on 261.22(a)(2)	(C)	
D003	Reactive waste based upon 261.23	(R)	
D004	Arsenic	(T)	7440-38-2
D005	Barium	(T)	7440-39-3
D006	Cadmium	(T)	7440-43-9
D007	Chromium	(T)	7440-47-3
D008	Lead	(T)	7439-92-1
D009	Mercury	(T)	7439-97-6
D010	Selenium	(T)	7782-49-2
D011	Silver	(T)	7440-22-4
D012	Endrin	(T)	72-20-8
D013	Lindane	(T)	58-89-9
D014	Methoxychlor	(T)	72-43-5
D015	Toxaphene	(T)	8001-35-2
D016	2,4-D	(T)	94-75-7
D017	2,4,5-TP (Silvex)	(T)	93-72-1
D018	Benzene	(T)	71-43-2
D019	Carbon tetrachloride	(T)	56-23-5
D020	Chlordane	(T)	57-74-9
D021	Chlorobenzene	(T)	108-90-7
D022	Chloroform	(T)	67-66-3
D023	o-Cresol	(T)	95-48-7
D024	m-Cresol	(T)	108-39-4
D025	p-Cresol	(T)	106-44-5
D026	Cresol	(T)	
D027	1,4-Dichlorobenzene	(T)	106-46-7
D028	1,2-Dichloroethane	(T)	107-06-2
D029	1,1-Dichloroethylene	(T)	75-35-4
D030	2,4-Dinitrotoluene	(T)	121-14-2
D031	Heptachlor (and its epoxide)	(T)	76-44-8
D032	Hexachlorobenzene	(T)	118-74-1
D033	Hexachlorobutadiene	(T)	87-68-3
D034	Hexachloroethane	(T)	67-72-1
D035	Methyl ethyl ketone	(T)	78-93-3
D036	Nitrobenzene	(T)	98-95-3
D037	Pentrachlorophenol	(T)	87-86-5
D038	Pyridine	(T)	110-86-1
D039	Tetrachloroethylene	(T)	127-18-4
D040	Trichloroethylene	(T)	79-01-6
D041	2,4,5-Trichlorophenol	(T)	95-95-4
D042	2,4,6-Trichlorophenol	(T)	88-06-2
D043	Vinyl chloride	(T)	75-01-4

Waste Code	Waste Description	Hazard Code	CAS No.
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing; containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)	
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)	
F003	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I)*	
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(T)	
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures	(I,T)	
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and plating on carbon steel; and (6) chemical etching and milling of aluminum	(T)	
F007	Spent cyanide plating bath solutions from electroplating operations	(R,T)	

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process	(R,T)	
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process	(R,T)	
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process	(R,T)	
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations	(R,T)	
F012	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process	(T)	
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process	(T)	
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes; these chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. [This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in Section 261.31 or Section 261.32]	(T)	
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes; these chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution	(T)	
F032	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with □261 35 of this chapter or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i e , F034 or F035), and where the generator does not resume or initiate use of chlorophenolic formulations) This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations; this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
F035	Wastewaters (except those that have not come into contact with		

Waste Code	Waste Description	Hazard Code	CAS No.
	process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium; this listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
F037	Petroleum refinery primary oil/water/solids separation sludge-Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in □261 31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing	(T)	
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge-Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries; such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment fromother process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in □261 31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing	(T)	
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028)	(T)	
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol	(T)	
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments	(T)	
K003	Wastewater treatment sludge from the production of molybdate orange pigments		

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)	
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)	
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)	(T)	
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)	
K008	Oven residue from the production of chrome oxide green pigments	(T)	
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)	
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)	
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R,T)	
K013	Bottom stream from the acetonitrile column in	(R,T)	
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)	
K015	Still bottoms from the distillation of benzylchloride	(T)	
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)	
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin	(T)	
K018	Heavy ends from the fractionation column in ethyl chloride production	(T)	
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride productiou	(T)	
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production	(T)	
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)	
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)	
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)	
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)	
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)	
K026	Stripping still tails from the production of methy ethyl pyridines	(T)	
K027	Deactivated centrifuge and distillation residues from toluene dilsocyanate production	(R, T)	
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane	(T)	
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)	
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and per-chloroethylene	(T)	
K031	MSMA and cacodylic acid	(T)	
K032	Wastewater treatment sludge from the production of chlordane	(T)	

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane	(T)	
K034	Filter solids from the filtration of hexachloro-cyclopentadiene in the production of chlordane	(T)	
K035	Wastewater treatment sludges generated in theproduction of creosote	(T)	
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)	
K037	Wastewater treatment sludges from the production of disulfoton	(T)	
K038	Wastewater from the washing and stripping of phorate production	(T)	
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	(T)	
K040	Wastewater treatment sludge from the production of phorate	(T)	
K041	Wastewater treatment sludge from the production of toxaphene	(T)	
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in theproduction of 2,4,5-T	(T)	
K044	Deactivated wastewater treatment sludges from the manufacturing and processing of explosives	(R)	
K045	Deactivated spent carbon from the treatment of wastewater containing explosives	(R)	
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds	(T)	
K047	Deactivated pink/red water from TNT operations	(R)	
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)	
K049	Slop oil emulsion solids from the petroleum refining industry	(T)	
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)	
K051	API separator sludge from the petroleum refining industry	(T)	
K052	Tank bottoms (leaded) from the petroleum refining in dustry	(T)	
K060	Ammonia still lime sludge from coking operations	(T)	
K061	Emission control dust/sludge from the primary production of steel in electric furnaces	(T)	
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332)	(C,T)	
K064	Acid plant blowdown slurry/sludge resulting from (T)the thickening of blowdown slurry from primary copper production		
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities	(T)	
K066	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production	(T)	
K069	Emission control dust/sludge from secondary lead smelting.	(T)	
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used	(T)	
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production	(T)	
K083	Distillation bottoms from aniline production	(T)	
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)	

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)	
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers,soaps, and stabilizers containing chromium and lead	(T)	
K087	Decanter tank tar sludge from coking operations	(T)	
K088	Spent potliners from primary aluminum reduction	(T)	
K090	Emission control dust or sludge from ferrochromiumsilicon production	(T)	
K091	Emission control dust or sludge from ferrochromium production	(T)	
K093	Distillation light ends from the production ofphthalic anhydride from ortho-xylene	(T)	
K094	Distillation bottoms from the production ofphthalic anhydride from ortho-xylene	(T)	
K095	Distillation bottoms from the production of1,1,1-trichloroethane	(T)	
K096	Heavy ends from the heavy ends column from theproduction of 1,1,1-trichloroethane	(T)	
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane	(T)	
K098	Untreated process wastewater from the production of toxaphene	(T)	
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting	(T)	
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)	
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds	(T)	
K103	Process residues from aniline extraction from the production of aniline	(T)	
K104	Combined wastewater streams generated from ni-trobenzene/aniline production	(T)	
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes	(T)	
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)	
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides		
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)	

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene		
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluendiamine via hydrogention of dinitrotoluene		
K114	Vicinals from the purification of toluenediamine in the production of toluendiamine via hydrogention of dinitrotoluene		
K115	Heavy ends from the purification of toluenediamine in the production of toluendiamine via hydrogention of dinitrotoluene		
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediaminepurification of toluenediamine via hydrogention of dinitrotoluene		
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide viabromination of ethene	(T)	
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)	
K123	Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt		
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts		
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts		
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts		
K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide	(C,T)	
K132	Spent absorbent and wastewater separator solids from the production of methyl bromide	(T)	
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene	(T)	
K141	Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal This listing does not include K087 (decanter tank tar sludges from coking operations)	(T)	
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products from coal	(T)	
K143	Process residues from the recovery of light oil,including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal	(T)	
K144	Wastewater sump residues from light oil refining, including, but not limited to,intercepting or contamination sump sludges from the recovery of coke by-products produced from coal	(T)	
K145	Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal	(T)	
K147	Tar storage tank residues from coal tar refining	(T)	
K148	Residues from coal tar distillation, including but not limited to, still bottoms	(T)	
K149	Distillation bottoms from the production of alpha-(or methyl-)		

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
	chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups, (This waste does not include still bottoms from the distillation of benzyl chloride)	(T)	
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha-(or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups	(T)	
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha-(or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups	(T)	
K156	Organic wastes (including heavy ends, still bottoms, light ends, spent solvents, filtrates and decantes) from the production of carbamates and carbamoyl oximes.	(T)	
K157	Wastewaters (including scrubber waters, condenser waters, washwaters and separation waters) from the production of carbamates and carbamoyl oximes.	(T)	
K158	Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes.	(T)	
K159	Organics from treatment of thiocarbamate wastes	(T)	
K160	Solids (including filter wastes, separation solids and spent catalysts) from the production of thiocarbamates and solids from the treatment of thiocarbamate wastes.	(T)	
K161	Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust and floor sweepings from the production of dithiocarbamate acids and their salts.(This listing does not include K125 or K126.).		
K169	Crude oil storage tank sediment from petroleum refining operations.	(T)	
K170	Clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations.	(T)	
K171	Spent Hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(I,T)	
K172	Spent Hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(I,T)	

Waste Code	Waste Description	Hazard Code	CAS No.
K174	Wastewater treatment sludges from the production of ethylene dichloride or vinyl chloride monomer (including sludges that result from commingled ethylene dichloride or vinyl chloride monomer wastewater and other wastewater), unless the sludges meet the following conditions: (i) they are disposed of in a subtitle C or non-hazardous landfill licensed or permitted by the state or federal government ; (ii) they are not otherwise placed on the land prior to final disposal; and (iii) the generator maintains documentation demonstrating that the waste was either disposed of in an on-site landfill or consigned to a transporter ot disposal facility that provided written commitment to dispose of the waste in an off-site landfill. Respondents in any action brought to enforce the requirements of subtitle C must, upon a showing by the government that the respondent managaed wastewater treatment sludges from the production of vinyl chloride monomer or ethylene dichloride, demonstrate tht they meet the terms of the exclusion set forth above. In doing so, they must provide appropriate documentation (cont	(T)	
K175	Wastewater treatment sludges from the production of vinyl chloride monomer using mercuric chloride catalyst in an acetylene-based process.	(T)	
K176	Baghouse filters from the production of antimony oxide, including filters from the production of inermediates. (e.g., antimony metal or crude antimony oxide).	(E)	
K177	Slag from the production of antimony oxide that is speculatively accumulated or disposed, including slag from the production of intermediates (e.g., antimony metal or crude antimony oxide)	(T)	
K178	Solids from manufacturing and manufacturing-site storage of ferris chloride from acids formed during the production of titanium dioxide using the chloride-ilmenite process.	(T)	
K181	Nonwastewaters from the production of certain dyes, pigments, and FD&C colorants.		
P001	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1 - phenylbutyl)-, & salts, when present at concentrations greater than 0.3%		181-81-2
P001	Warfarin, & salts, when present at concentrations greater than 0.3%		181-81-2
P002	Acetamide, N-(aminothioxomethyl)-		591-08-2
P002	1-Acetyl-2-thiourea		591-08-2
P003	Acrolein		107-02-8
P003	2-Propenal		107-02-8
P004	Aldrin		309-00-2
P004	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-		309-00-2
P005	Allyl alcohol		107-18-6
P005	2-Propen-1-ol		107-18-6
P006	Aluminum phosphide (R,T)		20859-73-8
P007	5-(Aminomethyl)-3-isoxazolol		2763-96-4
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-		2763-96-4
P008	4-Aminopyridine		504-24-5
P008	4-Pyridinamine		504-24-5
P009	Ammonium picrate (R)		131-74-8

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P009	Phenol, 2,4,6-trinitro-, ammonium salt (R)		131-74-8
P010	Arsenic acid H3AsO4		7778-39-4
P011	Arsenic oxide As2O5		1303-28-2
P011	Arsenic pentoxide		1303-28-2
P012	Arsenic oxide As2O3		1327-53-3
P012	Arsenic trioxide		1327-53-3
P013	Barium cyanide		542-62-1
P014	Benzenethiol		108-98-5
P014	Thiophenol		108-98-5
P015	Beryllium powder		7440-41-7
P016	Dichloromethyl ether		542-88-1
P016	Methane, oxybis[chloro-		542-88-1
P017	Bromoacetone		598-31-2
P017	2-Propanone, 1-bromo-		598-31-2
P018	Brucine		357-57-3
P018	Strychnidin-10-one, 2,3-dimethoxy-		357-57-3
P020	Dinoseb		88-85-7
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro-		88-85-7
P021	Calcium cyanide		592-01-8
P021	Calcium cyanide Ca(CN)2		592-01-8
P022	Carbon disulfide		75-15-0
P023	Acetaldehyde, chloro-		107-20-0
P023	Chloroacetaldehyde		107-20-0
P024	Benzenamine, 4-chloro-		106-47-8
P024	p-Chloroaniline		106-47-8
P026	1-(o-Chlorophenyl)thiourea		5344-82-1
P026	Thiourea, (2-chlorophenyl)-		5344-82-1
P027	3-Chloropropionitrile		542-76-7
P027	Propanenitrile, 3-chloro-		542-76-7
P028	Benzene, (chloromethyl)-		100-44-7
P028	Benzyl chloride		100-44-7
P029	Copper cyanide		544-92-3
P029	Copper cyanide Cu(CN)		544-92-3
P030	Cyanides (soluble cyanide salts), not otherwise specified		....
P031	Cyanogen		460-19-5
P031	Ethanedinitrile		460-19-5
P033	Cyanogen chloride		506-77-4
P033	Cyanogen chloride (CN)Cl		506-77-4
P034	2-Cyclohexyl-4,6-dinitrophenol		131-89-5
P034	Phenol, 2-cyclohexyl-4,6-dinitro-		131-89-5
P036	Arsonous dichloride, phenyl-		696-28-6
P036	Dichlorophenylarsine		696-28-6
P037	Dieldrin		60-57-1
P037	2,7:3,6-Dimethanonaphth [2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-		60-57-1
P038	Arsine, diethyl-		692-42-2
P038	Diethylarsine		692-42-2
P039	Disulfoton		298-04-4
P039	Phosphorodithioic acid, O,O-diethyl.S-[2-(ethylthio)ethyl] ester		298-04-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P040	O,O-Diethyl O-pyrazinyl phosphorothioate		297-97-2
P040	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester		297-97-2
P041	Diethyl-p-nitrophenyl phosphate		311-45-5
P041	Phosphoric acid, diethyl 4-nitrophenyl ester		311-45-5
P042	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-		51-43-4
P042	Epinephrine		51-43-4
P043	Diisopropylfluorophosphate (DFP)		55-91-4
P043	Phosphorofluoridic acid, bis(1-methylethyl) ester		55-91-4
P044	Dimethoate		60-51-5
P044	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester		60-51-5
P045	2-Butanone, 3,3-dimethyl-1-(methylthio)-, ...O-[methylamino)carbonyl] oxime		39196-18-4
P045	Thiofanox		39196-18-4
P046	Benzeneethanamine, alpha,alpha-dimethyl-		122-09-8
P046	alpha,alpha-Dimethylphenethylamine		122-09-8
P047	4,6-Dinitro-o-cresol, & salts 1		1534-52-
P047	Phenol, 2-methyl-4,6-dinitro-, & salts, 1		1534-52-
P048	2,4-Dinitrophenol		51-28-5
P048	Phenol, 2,4-dinitro-		51-28-5
P049	Dithiobiuret		541-53-7
P049	Thioimidodicarbonic diamide [(H2N)C(S)]2NH		541-53-7
P050	Endosulfan		115-29-7
P050	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide		115-29-7
P051	2,7:3,6-Dimethanonaphth [2,3-b]oxirene,3,4,5,6,9,9-hexa-chloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-, & metabolites		172-20-8
P051	Endrin		72-20-8
P051	Endrin, & metabolites		72-20-8
P054	Aziridine		151-56-4
P054	Ethyleneimine		151-56-4
P056	Fluorine		7782-41-4
P057	Acetamide, 2-fluoro-		640-19-7
P057	Fluoroacetamide		640-19-7
P058	Acetic acid, fluoro-, sodium salt		62-74-8
P058	Fluoroacetic acid, sodium salt		62-74-8
P059	Heptachlor		76-44-8
P059	4,7-Methano-1H-indene,1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-		76-44-8
P060	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-		465-73-6
P060	Isodrin		465-73-6
P062	Hexaethyl tetraphosphate		757-58-4
P062	Tetraphosphoric acid, hexaethyl ester		757-58-4
P063	Hydrocyanic acid		74-90-8
P063	Hydrogen cyanide		74-90-8
P064	Methane, isocyanato-		624-83-9
P064	Methyl isocyanate		624-83-9
P065	Fulminic acid, mercury(2+) salt (R,T)		628-86-4

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
P065	Mercury fulminate (R,T)		628-86-4
P066	Ethanimidothioic acid,...N-[[(methylamino)carbonyl]oxy]-, methyl ester		16752-77-5
P066	Methomyl		16752-77-5
P067	Aziridine, 2-methyl-		75-55-8
P067	1,2-Propylenimine		75-55-8
P068	Hydrazine, methyl-		60-34-4
P068	Methyl hydrazine		60-34-4
P069	2-Methyllactonitrile		75-86-5
P069	Propanenitrile, 2-hydroxy-2-methyl-		75-86-5
P070	Aldicarb		116-06-3
P070	Propanal, 2-methyl-2-(methylthio)-,...O-[(methylamino)carbonyl]oxime		116-06-3
P071	Methyl parathion		298-00-0
P071	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester		298-00-0
P072	alpha-Naphthylthiourea		86-88-4
P072	Thiourea, 1-naphthalenyl-		86-88-4
P073	Nickel carbonyl		13463-39-3
P073	Nickel carbonyl Ni(CO)4, (T-4)-		13463-39-3
P074	Nickel cyanide		557-19-7
P074	Nickel cynaide Ni(CN)2		557-19-7
P075	Nicotine, & salts		154-11-5
P075	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts		154-11-5
P076	Nitric oxide		10102-43-9
P076	Nitrogen oxide NO		10102-43-9
P077	Benzenamine, 4-nitro-		100-01-6
P077	p-Nitroaniline		100-01-6
P078	Nitrogen dioxide		10102-44-0
P078	Nitrogen oxide NO2		10102-44-0
P081	Nitroglycerine (R)		55-63-0
P081	1,2,3-Propanetriol, trinitrate (R)		55-63-0
P082	Methanamine, N-methyl-N-nitroso-		62-75-9
P082	N-Nitrosodimethylamine		62-75-9
P084	N-Nitrosomethylvinylamine		4549-40-0
P084	Vinylamine, N-methyl-N-nitroso-		4549-40-0
P085	Diphosphoramide, octamethyl-		152-16-9
P085	Octamethylpyrophosphoramide		152-16-9
P087	Osmium oxide OsO4, (T-4)-		20816-12-0
P087	Osmium tetroxide		20816-12-0
P088	Endothall		145-73-3
P088	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid		145-73-3
P089	Parathion		56-38-2
P089	Phosphorothioic acid, O,O-diethyl, O-(4-nitrophenyl) ester		56-38-2
P092	Mercury, (acetato-O)phenyl-		62-38-4
P092	Phenylmercury acetate		62-38-4
P093	Phenylthiourea		103-85-5
P093	Thiourea, phenyl-		103-85-5
P094	Phorate		298-02-2
P094	Phosphorodithioic acid, O,O-diethyl.S-[(ethylthio)methyl] ester		298-02-2
P095	Carbonic dichloride		75-44-5
P095	Phosgene		75-44-5

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P096	Hydrogen phosphide		7803-51-2
P096	Phosphine		7803-51-2
P097	Famphur		52-85-7
P097	Phosphorothioic acid,...O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester		52-85-7
P098	Potassium cyanide		151-50-8
P098	Potassium cyanide K(CN)		151-50-8
P099	Argentate(1-), bis(cyano-C)-, potassium		506-61-6
P099	Potassium silver cyanide		506-61-6
P101	Ethyl cyanide		107-12-0
P101	Propanenitrile		107-12-0
P102	Propargyl alcohol		107-19-7
P102	2-Propyn-1-ol		107-19-7
P103	Selenourea		630-10-4
P104	Silver cyanide		506-64-9
P104	Silver cyanide Ag(CN)		506-64-9
P105	Sodium azide		26628-22-8
P106	Sodium cyanide		143-33-9
P106	Sodium cyanide Na(CN)		143-33-9
P108	Strychnidin-10-one, & salts		157-24-9
P108	Strychnine, & salts		157-24-9
P109	Tetraethyldithiopyrophosphate		3689-24-5
P109	Thiodiphosphoric acid, tetraethyl ester		3689-24-5
P110	Plumbane, tetraethyl-		78-00-2
P110	Tetraethyl lead		78-00-2
P111	Diphosphoric acid, tetraethyl ester		107-49-3
P111	Tetraethyl pyrophosphate		107-49-3
P112	Methane, tetranitro-(R)		509-14-8
P112	Tetranitromethane (R)		509-14-8
P113	Thallic oxide		1314-32-5
P113	Thallium oxide Tl2O3		1314-32-5
P114	Selenious acid, dithallium(1+) salt		12039-52-0
P114	Thallium(I) selenite		12039-52-0
P115	Sulfuric acid, dithallium(1+) salt		7446-18-6
P115	Thallium(I) sulfate		7446-18-6
P116	Hydrazinecarbothioamide		79-19-6
P116	Thiosemicarbazide		79-19-6
P118	Methanethiol, trichloro-		75-70-7
P118	Trichloromethanethiol		75-70-7
P119	Ammonium vanadate		7803-55-6
P119	Vanadic acid, ammonium salt		7803-55-6
P120	Vanadium oxide V2O5		1314-62-1
P120	Vanadium pentoxide		1314-62-1
P121	Zinc cyanide		557-21-1
P121	Zinc cyanide Zn(CN)2		557-21-1
P122	Zinc phosphide Zn3P2, when present at concentrations greater than 10% (R,T)		1314-84-7
P123	Toxaphene		8001-35-2
P127	7-Benzofuranol, 2,3-dihydro-2,2-dimethylmethylcarbamate.		1563-66-2
P127	Carbofuran.		1563-66-2

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
P128	Mexacarbamate		315-18-4
P128	Phenol, 4-(dimethylamino)-3,5-dimethyl-,methylcarbamate(ester).		315-18-4
P185	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-,O- [(methylamino)-carbonyl]oxime.		26419-73-8
P185	Tirpate.		26419-73-8
P188	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol -5-yl methylcarbamate ester (1:1).		57-64-7
P188	Physostigmine salicylate.		57-64-7
P188	Physostigmine salicylate.		57-64-7
P189	Carbamic acid, [(dibutylamino)-thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester.		55285-14-8
P189	Carbosulfan.		55285-14-8
P190	Carbamic acid, methyl-, 3-methylphenyl ester.		1129-41-5
P190	Metolcarb.		1129-41-5
P191	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester.		644-64-4
P191	Dimetilan.		644-64-4
P192	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester.		119-38-0
P192	Isolan.		119-38-0
P194	Ethanimidothioc acid, 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxo-, methyl ester.		23135-22-0
P194	Oxamyl.		23135-22-0
P196	Manganese, bis(dimethylcarbamodithioato-S,S')-,		15339-36-3
P196	Manganese dimethyldithiocarbamate.		15339-36-3
P197	Formparanate.		17702-57-7
P197	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[(methyl-amino)carbonyl]o xy]phenyl]-		17702-57-7
P198	Formetanate hydrochloride.		23422-53-9
P198	Methanimidamide, N,N-dimethyl-N'-[3-[[(methylamino)-carbonyl]oxy] phenyl]-, monohydrochloride.		23422-53-9
P199	Methiocarb.		2032-65-7
P199	Phenol, (3,5-dimethyl-4-(methylthio)-,methylcarbamate		2032-65-7
P201	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate.		2631-37-0
P201	Promecarb		2631-37-0
P202	m-Cumenyl methylcarbamate.		64-00-6
P202	3-Isopropylphenyl N-methylcarbamate.		64-00-6
P202	Phenol, 3-(1-methylethyl)-, methyl carbamate.		64-00-6
P203	Aldicarb sulfone.		1646-88-4
P203	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime.		1646-88-4
P204	Physostigmine.		57-47-6
P204	Physostigmine.		57-47-6
P204	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-,methylcarbamate (ester), (3aS-cis)-.		57-47-6
P205	Zinc, bis(dimethylcarbamodithioato-S,S')-,		137-30-4
P205	Ziram.		137-30-4
U001	Acetaldehyde (I)		75-07-0
U001	Ethanal (I)		75-07-0

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U002	Acetone (I)		67-64-1
U002	2-Propanone (I)		67-64-1
U003	Acetonitrile (I,T)		75-05-8
U004	Acetophenone		98-86-2
U004	Ethanone, 1-phenyl-		98-86-2
U005	Acetamide, N-9H-fluoren-2-yl-		53-96-3
U005	2-Acetylaminofluorene		53-96-3
U006	Acetyl chloride (C,R,T)		75-36-5
U007	Acrylamide		79-06-1
U007	2-Propenamide		79-06-1
U008	Acrylic acid (I)		79-10-7
U008	2-Propenoic acid (I)		79-10-7
U009	Acrylonitrile		107-13-1
U009	2-Propenenitrile		107-13-1
U010	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-		50-07-7
U010	Mitomycin C		50-07-7
U011	Amitrole		61-82-5
U011	1H-1,2,4-Triazol-3-amine		61-82-5
U012	Aniline (I,T)		62-53-3
U012	Benzenamine (I,T)		62-53-3
U014	Auramine		492-80-8
U014	Benzenamine, 4,4'-carbonimidoylbis [N,N-dimethyl-		492-80-8
U015	Azaserine		115-02-6
U015	L-Serine, diazoacetate (ester)		115-02-6
U016	Benz[c]acridine		225-51-4
U017	Benzal chloride		98-87-3
U017	Benzene, (dichloromethyl)-		98-87-3
U018	Benz[a]anthracene		56-55-3
U019	Benzene (I,T)		71-43-2
U020	Benzenesulfonic acid chloride (C,R)		98-09-9
U020	Benzenesulfonyl chloride (C,R)		98-09-9
U021	Benzidine		92-87-5
U021	[1,1'-Biphenyl]-4,4'-diamine		92-87-5
U022	Benzo[a]pyrene		50-32-8
U023	Benzene, (trichloromethyl)-		98-07-7
U023	Benzotrichloride (C,R,T)		98-07-7
U024	Dichloromethoxy ethane		111-91-1
U024	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-		111-91-1
U025	Dichloroethyl ether		111-44-4
U025	Ethane, 1,1'-oxybis[2-chloro-		111-44-4
U026	Chlornaphazin		494-03-1
U026	Naphthalenamine, N,N'-bis(2-chloroethyl)-		494-03-1
U027	Dichloroisopropyl ether		108-60-1
U027	Propane, 2,2'-oxybis[2-chloro-		108-60-1
U028	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester		117-81-7
U028	Diethylhexyl phthalate		117-81-7
U029	Methane, bromo-		74-83-9
U029	Methyl bromide		74-83-9

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U030	Benzene, 1-bromo-4-phenoxy-		101-55-3
U030	4-Bromophenyl phenyl ether		101-55-3
U031	1-Butanol (I)		71-36-3
U031	n-Butyl alcohol (I)		71-36-3
U032	Calcium chromate		13765-19-0
U032	Chromic acid H2CrO4, calcium salt		13765-19-0
U033	Carbonic difluoride		353-50-4
U033	Carbon oxyfluoride (R,T)		353-50-4
U034	Acetaldehyde, trichloro-		75-87-6
U034	Chloral		75-87-6
U035	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-		305-03-3
U035	Chlorambucil		305-03-3
U036	Chlordane, alpha & gamma isomers		57-74-9
U036	4,7-Methano-1H-indene,1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-		57-74-9
U037	Benzene, chloro-		108-90-7
U037	Chlorobenzene		108-90-7
U038	Benzeneacetic acid,4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester		510-15-6
U038	Chlorobenzilate		510-15-6
U039	p-Chloro-m-cresol		59-50-7
U039	Phenol, 4-chloro-3-methyl-		59-50-7
U041	Epichlorohydrin		106-89-8
U041	Oxirane, (chloromethyl)-		106-89-8
U042	2-Chloroethyl vinyl ether		110-75-8
U042	Ethene, (2-chloroethoxy)-		110-75-8
U043	Ethene, chloro-		75-01-4
U043	Vinyl chloride		75-01-4
U044	Chloroform		67-66-3
U044	Methane, trichloro-		67-66-3
U045	Methane, chloro-(I, T)		74-87-3
U045	Methyl chloride (I,T)		74-87-3
U046	Chloromethyl methyl ether		107-30-2
U046	Methane, chloromethoxy-		107-30-2
U047	beta-Chloronaphthalene		91-58-7
U047	Naphthalene, 2-chloro-		91-58-7
U048	o-Chlorophenol		95-57-8
U048	Phenol, 2-chloro-		95-57-8
U049	Benzenamine, 4-chloro-2-methyl-, hydrochloride		3165-93-3
U049	4-Chloro-o-toluidine, hydrochloride		3165-93-3
U050	Chrysene		218-01-9
U051	Creosote		....
U052	Cresol (Cresylic acid)		1319-77-3
U052	Phenol, methyl-		1319-77-3
U053	2-Butenal		4170-30-3
U053	Crotonaldehyde		4170-30-3
U055	Benzene, (1-methylethyl)-(I)		98-82-8
U055	Cumene (I)		98-82-8
U056	Benzene, hexahydro-(I)		110-82-7
U056	Cyclohexane (I)		110-82-7

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U057	Cyclohexanone (I)		108-94-1
U058	Cyclophosphamide		50-18-0
U058	2H-1,3,2-Oxazaphosphorin-2-amine,...N,N-bis(2-chloroethyl)te trahydro-, 2-oxide		50-18-0
U059	Daunomycin		20830-81-3
U059	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6 ,8,11-trihydroxy-1-methoxy-, (8S-cis)-		20830-81-3
U060	Benzene, 1,1'-(2,2-dichloroethylidene)bis [4-chloro-		72-54-8
U060	DDD		72-54-8
U061	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-chloro-		50-29-3
U061	DDT		50-29-3
U062	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester		2303-16-4
U062	Diallate		2303-16-4
U063	Dibenz[a,h]anthracene		53-70-3
U064	Benzo[rst]pentaphene		189-55-9
U064	Dibenzo[a,i]pyrene		189-55-9
U066	1,2-Dibromo-3-chloropropane		96-12-8
U066	Propane, 1,2-dibromo-3-chloro-		96-12-8
U067	Ethane, 1,2-dibromo-		106-93-4
U067	Ethylene dibromide		106-93-4
U068	Methane, dibromo-		74-95-3
U068	Methylene bromide		74-95-3
U069	1,2-Benzenedicarboxylic acid, dibutyl ester		84-74-2
U069	Dibutyl phthalate		84-74-2
U070	Benzene, 1,2-dichloro-		95-50-1
U070	o-Dichlorobenzene		95-50-1
U071	Benzene, 1,3-dichloro-		541-73-1
U071	m-Dichlorobenzene		541-73-1
U072	Benzene, 1,4-dichloro-		106-46-7
U072	p-Dichlorobenzene		106-46-7
U073	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-		91-94-1
U073	3,3'-Dichlorobenzidine		91-94-1
U074	2-Butene, 1,4-dichloro-(I,T)		764-41-0
U074	1,4-Dichloro-2-butene (I,T)		764-41-0
U075	Dichlorodifluoromethane		75-71-8
U075	Methane, dichlorodifluoro-		75-71-8
U076	Ethane, 1,1-dichloro-		75-34-3
U076	Ethylidene dichloride		75-34-3
U077	Ethane, 1,2-dichloro-		107-06-2
U077	Ethylene dichloride		107-06-2
U078	1,1-Dichloroethylene		75-35-4
U078	Ethene, 1,1-dichloro-		75-35-4
U079	1,2-Dichloroethylene		156-60-5
U079	Ethene, 1,2-dichloro-, (E)-		156-60-5
U080	Methane, dichloro-		75-09-2
U080	Methylene chloride		75-09-2
U081	2,4-Dichlorophenol		120-83-2
U081	Phenol, 2,4-dichloro-		120-83-2

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U082	2,6-Dichlorophenol		87-65-0
U082	Phenol, 2,6-dichloro-		87-65-0
U083	Propane, 1,2-dichloro-		78-87-5
U083	Propylene dichloride		78-87-5
U084	1,3-Dichloropropene		542-75-6
U084	1-Propene, 1,3-dichloro-		542-75-6
U085	2,2'-Bioxirane		1464-53-5
U085	1,2:3,4-Diepoxybutane (I,T)		1464-53-5
U086	N,N'-Diethylhydrazine		1615-80-1
U086	Hydrazine, 1,2-diethyl-		1615-80-1
U087	O,O-Diethyl S-methyl dithiophosphate		3288-58-2
U087	Phosphorodithioic acid, O,O-diethyl S-methyl ester		3288-58-2
U088	1,2-Benzenedicarboxylic acid, diethyl ester		84-66-2
U088	Diethyl phthalate		84-66-2
U089	Diethylstilbesterol		56-53-1
U089	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-		56-53-1
U090	1,3-Benzodioxole, 5-propyl-		94-58-6
U090	Dihydrosafrole		94-58-6
U091	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-		119-90-4
U091	3,3'-Dimethoxybenzidine		119-90-4
U092	Dimethylamine (I)		124-40-3
U092	Methanamine, N-methyl-(I)		124-40-3
U093	Benzenamine, N,N-dimethyl-4-(phenylazo)-		60-11-7
U093	p-Dimethylaminoazobenzene		60-11-7
U094	Benz[a]anthracene, 7,12-dimethyl-		57-97-6
U094	7,12-Dimethylbenz[a]anthracene		57-97-6
U095	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-		119-93-7
U095	3,3'-Dimethylbenzidine		119-93-7
U096	alpha,alpha-Dimethylbenzylhydroperoxide (R)		80-15-9
U096	Hydroperoxide, 1-methyl-1-phenylethyl-(R)		80-15-9
U097	Carbamic chloride, dimethyl-		79-44-7
U097	Dimethylcarbamoyl chloride		79-44-7
U098	1,1-Dimethylhydrazine		57-14-7
U098	Hydrazine, 1,1-dimethyl-		57-14-7
U099	1,2-Dimethylhydrazine		540-73-8
U099	Hydrazine, 1,2-dimethyl-		540-73-8
U101	2,4-Dimethylphenol		105-67-9
U101	Phenol, 2,4-dimethyl-		105-67-9
U102	1,2-Benzenedicarboxylic acid, dimethyl ester		131-11-3
U102	Dimethyl phthalate		131-11-3
U103	Dimethyl sulfate		77-78-1
U103	Sulfuric acid, dimethyl ester		77-78-1
U105	Benzene, 1-methyl-2,4-dinitro-		121-14-2
U105	2,4-Dinitrotoluene		121-14-2
U106	Benzene, 2-methyl-1,3-dinitro-		606-20-2
U106	2,6-Dinitrotoluene		606-20-2
U107	1,2-Benzenedicarboxylic acid, dioctyl ester		117-84-0
U107	Di-n-octyl phthalate		117-84-0
U108	1,4-Diethyleneoxide		123-91-1
U108	1,4-Dioxane		123-91-1

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No
U109	1,2-Diphenylhydrazine		122-66-7
U109	Hydrazine, 1,2-diphenyl-		122-66-7
U110	Dipropylamine (I)		142-84-7
U110	1-Propanamine, N-propyl-(I)		142-84-7
U111	Di-n-propylnitrosamine		621-64-7
U111	1-Propanamine, N-nitroso-N-propyl-		621-64-7
U112	Acetic acid ethyl ester (I)		141-78-6
U112	Ethyl acetate (I)		141-78-6
U113	Ethyl acrylate (I)		140-88-5
U113	2-Propenoic acid, ethyl ester (I)		140-88-5
U114	Carbamodithioic acid, 1,2-ethanediylbis-,...salts & esters		1111-54-6
U114	Ethylenebisdithiocarbamic acid, salts & esters		1111-54-6
U115	Ethylene oxide (I,T)		75-21-8
U115	Oxirane (I,T)		75-21-8
U116	Ethylenethiourea		96-45-7
U116	2-Imidazolidinethione		96-45-7
U117	Ethane, 1,1'-oxybis-(I)		60-29-7
U117	Ethyl ether (I)		60-29-7
U118	Ethyl methacrylate		97-63-2
U118	2-Propenoic acid, 2-methyl-, ethyl ester		97-63-2
U119	Ethyl methanesulfonate		62-50-0
U119	Methanesulfonic acid, ethyl ester		62-50-0
U120	Fluoranthene		206-44-0
U121	Methane, trichlorofluoro-		75-69-4
U121	Trichloromonofluoromethane		75-69-4
U122	Formaldehyde		50-00-0
U123	Formic acid (C,T)		64-18-6
U124	Furan (I)		110-00-9
U124	Furfuran (I)		110-00-9
U125	2-Furancarboxaldehyde (I)		98-01-1
U125	Furfural (I)		98-01-1
U126	Glycidylaldehyde		765-34-4
U126	Oxiranecarboxyaldehyde		765-34-4
U127	Benzene, hexachloro-		118-74-1
U127	Hexachlorobenzene		118-74-1
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-		87-68-3
U128	Hexachlorobutadiene		87-68-3
U129	Cyclohexane, 1,2,3,4,5,6-hexachloro- ,.(1alpha,2alpha,3beta,4alpha,5alpha,6beta)-		58-89-9
U129	Lindane		58-89-9
U130	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-		77-47-4
U130	Hexachlorocyclopentadiene		77-47-4
U131	Ethane, hexachloro-		67-72-1
U131	Hexachloroethane		67-72-1
U132	Hexachlorophene		70-30-4
U132	Phenol, 2,2'-methylenebis[3,4,6-trichloro-		70-30-4
U133	Hydrazine (R,T)		302-01-2
U134	Hydrofluoric acid (C,T)		7664-39-3
U134	Hydrogen fluoride (C,T)		7664-39-3
U135	Hydrogen sulfide		7783-06-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U135	Hydrogen sulfide H2S		7783-06-4
U136	Arsinic acid, dimethyl-		75-60-5
U136	Cacodylic acid		75-60-5
U137	Indeno[1,2,3-cd]pyrene		193-39-5
U138	Methane, iodo-		74-88-4
U138	Methyl iodide		74-88-4
U140	Isobutyl alcohol (I,T)		78-83-1
U140	1-Propanol, 2-methyl-(I,T)		78-83-1
U141	1,3-Benzodioxole, 5-(1-propenyl)-		120-58-1
U141	Isosafrole		120-58-1
U142	Kepone		143-50-0
U142	1,3,4-Metheno-2H-cyclobuta [cd]pentalen-2-one,1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-		143-50-0
U143	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-t etrahydro-1H-pyrrolizin-1-ylester,...[1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-		303-34-4
U143	Lasiocarpine		303-34-4
U144	Acetic acid, lead(2+) salt		301-04-2
U144	Lead acetate		301-04-2
U145	Lead phosphate		7446-27-7
U145	Phosphoric acid, lead(2+) salt (2:3)		7446-27-7
U146	Lead, bis(acetato-O)tetrahydroxytri-		1335-32-6
U146	Lead subacetate		1335-32-6
U147	2,5-Furandione		108-31-6
U147	Maleic anhydride		108-31-6
U148	Maleic hydrazide		123-33-1
U148	3,6-Pyridazinedione, 1,2-dihydro-		123-33-1
U149	Malononitrile		109-77-3
U149	Propanedinitrile		109-77-3
U150	Melphalan		148-82-3
U150	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-		148-82-3
U151	Mercury		7439-97-6
U152	Methacrylonitrile (I, T)		126-98-7
U152	2-Propenenitrile, 2-methyl-(I,T)		126-98-7
U153	Methanethiol (I, T)		74-93-1
U153	Thiomethanol (I,T)		74-93-1
U154	Methanol (I)		67-56-1
U154	Methyl alcohol (I)		67-56-1
U155	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-		91-80-5
U155	Methapyrilene		91-80-5
U156	Carbonochloridic acid, methyl ester (I,T)		79-22-1
U156	Methyl chlorocarbonate (I,T)		79-22-1
U157	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-		56-49-5
U157	3-Methylcholanthrene		56-49-5
U158	Benzenamine, 4,4'-methylenebis[2-chloro-		101-14-4
U158	4,4'-Methylenebis(2-chloroaniline)		101-14-4
U159	2-Butanone (I,T)		78-93-3
U159	Methyl ethyl ketone (MEK) (I,T)		78-93-3
U160	2-Butanone, peroxide (R,T)		1338-23-4
U160	Methyl ethyl ketone peroxide (R,T)		1338-23-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U161	Methyl isobutyl ketone (I)		108-10-1
U161	4-Methyl-2-pentanone (I)		108-10-1
U161	Pentanol, 4-methyl-		108-10-1
U162	Methyl methacrylate (I,T)		80-62-6
U162	2-Propenoic acid, 2-methyl-, methyl ester (I,T)		80-62-6
U163	Guanidine, N-methyl-N'-nitro-N-nitroso-		70-25-7
U163	MNNG		70-25-7
U164	Methylthiouracil		56-04-2
U164	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-		56-04-2
U165	Naphthalene		91-20-3
U166	1,4-Naphthalenedione		130-15-4
U166	1,4-Naphthoquinone		130-15-4
U167	1-Naphthalenamine		134-32-7
U167	alpha-Naphthylamine		134-32-7
U168	2-Naphthalenamine		91-59-8
U168	beta-Naphthylamine		91-59-8
U169	Benzene, nitro-		98-95-3
U169	Nitrobenzene (I,T)		98-95-3
U170	p-Nitrophenol		100-02-7
U170	Phenol, 4-nitro-		100-02-7
U171	2-Nitropropane (I,T)		79-46-9
U171	Propane, 2-nitro-(I,T)		79-46-9
U172	1-Butanamine, N-butyl-N-nitroso-		924-16-3
U172	N-Nitrosodi-n-butylamine		924-16-3
U173	Ethanol, 2,2'-(nitrosoimino)bis-		1116-54-7
U173	N-Nitrosodiethanolamine		1116-54-7
U174	Ethanamine, N-ethyl-N-nitroso-		55-18-5
U174	N-Nitrosodiethylamine		55-18-5
U176	N-Nitroso-N-ethylurea		759-73-9
U176	Urea, N-ethyl-N-nitroso-		759-73-9
U177	N-Nitroso-N-methylurea		684-93-5
U177	Urea, N-methyl-N-nitroso-		684-93-5
U178	Carbamic acid, methylnitroso-, ethyl ester		615-53-2
U178	N-Nitroso-N-methylurethane		615-53-2
U179	N-Nitrosopiperidine		100-75-4
U179	Piperidine, 1-nitroso-		100-75-4
U180	N-Nitrosopyrrolidine		930-55-2
U180	Pyrrolidine, 1-nitroso-		930-55-2
U181	Benzenamine, 2-methyl-5-nitro-		99-55-8
U181	5-Nitro-o-toluidine		99-55-8
U182	Paraldehyde		123-63-7
U182	1,3,5-Trioxane, 2,4,6-trimethyl-		123-63-7
U183	Benzene, pentachloro-		608-93-5
U183	Pentachlorobenzene		608-93-5
U184	Ethane, pentachloro-		76-01-7
U184	Pentachloroethane		76-01-7
U185	Benzene, pentachloronitro-		82-68-8
U185	Pentachloronitrobenzene (PCNB)		82-68-8
U186	1-Methylbutadiene (I)		504-60-9
U186	1,3-Pentadiene (I)		504-60-9

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U187	Acetamide, N-(4-ethoxyphenyl)-		62-44-2
U187	Phenacetin		62-44-2
U188	Phenol		108-95-2
U189	Phosphorus sulfide (R)		1314-80-3
U189	Sulfur phosphide (R)		1314-80-3
U190	1,3-Isobenzofurandione		85-44-9
U190	Phthalic anhydride		85-44-9
U191	2-Picoline		109-06-8
U191	Pyridine, 2-methyl-		109-06-8
U192	Benzamide,3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-		23950-58-5
U192	Pronamide		23950-58-5
U193	1,2-Oxathiolane, 2,2-dioxide		1120-71-4
U193	1,3-Propane sultone		1120-71-4
U194	1-Propanamine (I,T)		107-10-8
U194	n-Propylamine (I,T)		107-10-8
U196	Pyridine		110-86-1
U197	p-Benzoquinone		106-51-4
U197	2,5-Cyclohexadiene-1,4-dione		106-51-4
U200	Reserpine		50-55-5
U200	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-		50-55-5
U201	1,3-Benzenediol		108-46-3
U201	Resorcinol		108-46-3
U202	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts		181-07-2
U202	Saccharin, & salts		181-07-2
U203	1,3-Benzodioxole, 5-(2-propenyl)-		94-59-7
U203	Safrole		94-59-7
U204	Selenious acid		7783-00-8
U204	Selenium dioxide		7783-00-8
U205	Selenium sulfide		7488-56-4
U205	Selenium sulfide SeS2 (R,T)		7488-56-4
U206	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-,D-		18883-66-4
U206	D-Glucose, 2-deoxy-2-[[(methylnitrosoamino)-.carbonyl]amino]-		18883-66-4
U206	Streptozotocin		18883-66-4
U207	Benzene, 1,2,4,5-tetrachloro-		95-94-3
U207	1,2,4,5-Tetrachlorobenzene		95-94-3
U208	Ethane, 1,1,1,2-tetrachloro-		630-20-6
U208	1,1,1,2-Tetrachloroethane		630-20-6
U209	Ethane, 1,1,2,2-tetrachloro-		79-34-5
U209	1,1,2,2-Tetrachloroethane		79-34-5
U210	Ethene, tetrachloro-		127-18-4
U210	Tetrachloroethylene		127-18-4
U211	Carbon tetrachloride		56-23-5
U211	Methane, tetrachloro-		56-23-5
U213	Furan, tetrahydro-(I)		109-99-9
U213	Tetrahydrofuran (I)		109-99-9
U214	Acetic acid, thallium(1+) salt		563-68-8
U214	Thallium(I) acetate		563-68-8
U215	Carbonic acid, dithallium(1+) salt		6533-73-9

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U215	Thallium(I) carbonate		6533-73-9
U216	Thallium(I) chloride		7791-12-0
U216	Thallium chloride Tlcl		7791-12-0
U217	Nitric acid, thallium(1+) salt		10102-45-1
U217	Thallium(I) nitrate		10102-45-1
U218	Ethanethioamide		62-55-5
U218	Thioacetamide		62-55-5
U219	Thiourea		62-56-6
U220	Benzene, methyl-		108-88-3
U220	Toluene		108-88-3
U221	Benzenediamine, ar-methyl-		25376-45-8
U221	Toluenediamine		25376-45-8
U222	Benzenamine, 2-methyl-, hydrochloride		636-21-5
U222	o-Toluidine hydrochloride		636-21-5
U223	Benzene, 1,3-diisocyanatomethyl-(R,T)		26471-62-5
U223	Toluene diisocyanate (R,T)		26471-62-5
U225	Bromoform		75-25-2
U225	Methane, tribromo-		75-25-2
U226	Ethane, 1,1,1-trichloro-		71-55-6
U226	Methyl chloroform		71-55-6
U227	Ethane, 1,1,2-trichloro-		79-00-5
U227	1,1,2-Trichloroethane		79-00-5
U228	Ethene, trichloro-		79-01-6
U228	Trichloroethylene		79-01-6
U234	Benzene, 1,3,5-trinitro-		99-35-4
U234	1,3,5-Trinitrobenzene (R,T)		99-35-4
U235	1-Propanol, 2,3-dibromo-, phosphate (3:1)		126-72-7
U235	Tris(2,3-dibromopropyl) phosphate		126-72-7
U236	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-...dimethyl [1,1'-biphenyl]-4,4'-diyl)bis(azo)bis [5-amino-4-hydroxy]-, tetrasodium salt		72-57-1
U236	Trypan blue		72-57-1
U237	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-		66-75-1
U237	Uracil mustard		66-75-1
U238	Carbamic acid, ethyl ester		51-79-6
U238	Ethyl carbamate (urethane)		51-79-6
U239	Benzene, dimethyl-(I,T)		1330-20-7
U239	Xylene (I)		1330-20-7
U240	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters		194-75-7
U240	2,4-D, salts & esters		194-75-7
U243	Hexachloropropene		1888-71-7
U243	1-Propene, 1,1,2,3,3,3-hexachloro-		1888-71-7
U244	Thioperoxydicarbonic diamide [(H2N)C(S)]2S2,		137-26-8
U244	Thiram		137-26-8
U246	Cyanogen bromide (CN)Br		506-68-3
U247	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis [4-methoxy-		72-43-5
U247	Methoxychlor		72-43-5
U248	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less		181-81-2
U248	Warfarin, & salts, when present at concentrations of 0.3% or less		181-81-2

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
U249	Zinc phosphide Zn3P2, when present at concentrations of 10% or less		1314-84-7
U271	Benomyl.		17804-35-2
U271	Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester.		17804-35-2
U277	Carbamodithioic acid, diethyl-,2-chloro-2-propenyl ester.		95-06-7
U277	Sulfallate.		95-06-7
U278	Bendiocarb.		22781-23-3
U278	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate.		22781-23-3
U279	Carbaryl.		63-25-2
U279	1-Naphthalenol, methylcarbamate.		63-25-2
U280	Barban.		101-27-9
U280	Carbamic acid, (3-chlorophenyl)-,4-chloro-2-butynyl ester.		101-27-9
U328	Benzenamine, 2-methyl-		95-53-4
U328	o-Toluidine		95-53-4
U353	Benzenamine, 4-methyl-		106-49-0
U353	p-Toluidine		106-49-0
U359	Ethanol, 2-ethoxy-		110-80-5
U359	Ethylene glycol monoethyl ether		110-80-5
U364	Bendiocarb phenol.		22961-82-6
U364	1,3-Benzodioxol-4-ol, 2,2-dimethyl-,		22961-82-6
U365	H-Azepine-1-carbothioic acid, hexahydro-, S-ethyl ester.		2212-67-1
U365	Molinate.		2212-67-1
U366	Dazomet.		533-74-4
U366	2H-1,3,5-Thiadiazine-2-thione, tetrahydro-3,5-dimethyl-		533-74-4
U367	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-		1563-38-8
U367	Carbofuran phenol.		1563-38-8
U372	Carbamic acid, 1H-benzimidazol-2-yl, methylester.		10605-21-7
U372	Carbendazim.		10605-21-7
U373	Carbamic acid, phenyl-, 1-methylethyl ester.		122-42-9
U373	Propham.		122-42-9
U375	Carbamic acid, butyl-, 3-iodo-2-propynyl ester.		55406-53-6
U375	3-Iodo-2-propynyl n-butylcarbamate.		55406-53-6
U376	Carbamodithioic acid, dimethyl-, tetraanhydrosulfide with orthothioselenious acid.		144-34-3
U376	Selenium, tetrakis(dimethyldithiocarbamate).		144-34-3
U377	Carbamodithioic acid, methyl,-monopotassium salt.		137-41-7
U377	Potassium n-methyldithiocarbamate.		137-41-7
U378	Carbamodithioic acid, (hydroxymethyl)methyl-, monopotassium salt.		51026-28-9
U378	Potassium n-hydroxymethyl-n-methyldi-thiocarbamate.		51026-28-9
U379	Carbamodithioic acid, dibutyl, sodium salt.		136-30-1
U379	Sodium dibutyldithiocarbamate.		136-30-1
U381	Carbamodithioic acid, diethyl-, sodium salt.		148-18-5
U381	Sodium diethyldithiocarbamate.		148-18-5
U382	Carbamodithioic acid, dimethyl-, sodium salt.		128-04-1
U382	Sodium dimethyldithiocarbamate.		128-04-1
U383	Carbamodithioic acid, dimethyl, potassium salt.		128-03-0
U383	Potassium dimethyldithiocarbamate.		128-03-0
U384	Carbamodithioic acid, methyl-, monosodium salt.		137-42-8
U384	Metam Sodium.		137-42-8

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
U385	Carbamothioic acid, dipropyl-, S-propyl ester.		1929-77-7
U385	Vernolate.		1929-77-7
U386	Carbamothioic acid, cyclohexylethyl-, S-ethyl ester.		1134-23-2
U386	Cycloate.		1134-23-2
U386	Cycloate.		1134-23-2
U387	Carbamothioic acid, dipropyl-, S-(phenylmethyl) ester.		52888-80-9
U387	Prosulfocarb.		52888-80-9
U389	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3,3-trichloro-2-propenyl) ester.		2303-17-5
U389	Triallate.		2303-17-5
U390	Carbamothioic acid, dipropyl-, S-ethyl ester.		759-94-4
U390	EPTC.		759-94-4
U391	Carbamothioic acid, butylethyl-, S-propyl ester.		1114-71-2
U391	Pebulate.		1114-71-2
U392	Butylate.		2008-41-5
U392	Carbamothioic acid, bis(2-methylpropyl)-, S-ethyl ester.		2008-41-5
U393	Copper, bis(dimethylcarbamodithioato-S,S')-,		137-29-1
U393	Copper dimethyldithiocarbamate.		137-29-1
U394	A2213.		30558-43-1
U394	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester.		30558-43-1
U395	Diethylene glycol, dicarbamate.		5952-26-1
U395	Ethanol, 2,2'-oxybis-, dicarbamate.		5952-26-1
U396	Ferbam.		14484-64-1
U396	Iron, tris(dimethylcarbamodithioato-S,S')-,		14484-64-1
U400	Bis(pentamethylene)thiuram tetrasulfide.		120-54-7
U400	Piperidine, 1,1'-(tetrathiodicarbonothioyl)-bis-		120-54-7
U401	Bis(dimethylthiocarbamoyl) sulfide.		97-74-5
U401	Tetramethylthiuram monosulfide.		97-74-5
U402	Tetrabutylthiuram disulfide.		1634-02-2
U402	Thioperoxydicarbonic diamide, tetrabutyl.		1634-02-2
U403	Disulfiram.		97-77-8
U403	Thioperoxydicarbonic diamide, tetraethyl.		97-77-8
U404	Ethanamine, N,N-diethyl		121-44-8
U404	Triethylamine.		121-44-8
U407	Ethyl Ziram.		14324-55-1
U407	Zinc, bis(diethylcarbamodithioato-S,S')-		14324-55-1
U409	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester		23564-05-8
U409	Thiophanate-methyl.		23564-05-8
U410	Ethanimidothioic acid, N,N'-[thiobis[(methylimino)carbonyloxy]]bis-, dimethyl ester		59669-26-0
U410	Thiodicarb.		59669-26-0
U411	Phenol, 2-(1-methylethoxy)-, methylcarbamate.		114-26-1
U411	Propoxur.		114-26-1
	tetramethyl-		
001S	Aflatoxin		
002S	2,3,7,8-Tetrachlorodibenzo-p-dioxin		
003S	1,2,3,7,8-Pentachlorodibenzo-p-dioxin		
004S	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin		

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
005S	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin		
006S	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin		
007S	2,3,7,8-Tetrachlorodibenzo furan		
001K	Residues, including emission control sludges, from the production process and packaging of 4,4' Methylenebis (2 chloroaniline)	(T)	
002K	Wash acids generated after the effective date of these rules from the production of 3,3' - Dichlorobenzidine and still bottoms from the recovery of these acids, excluding wash acids that are recycled or any materials that are reclaimed from the wash acids and are used beneficially.	(T)	
001U	Actinomycin D		50-76-0
002U	Allyl chloride		107-05-1
003U	2-aminoanthraquinone		117-79-3
004U	Aminoazobenzene		60-09-3
005U	0-aminoazotoluene		97-56-3
006U	4-aminobiphenyl		92-67-1
007U	3-amino-9-ethyl carbazole		132-32-1
008U	1-amino-2-methyl anthraquinone		82-28-0
009U	Anilazine		101-05-3
011U	o-Anisidine		90-04-1
012U	o-Anisidine hydrochloride		134-29-2
013U	Antimony (when in the form of particles 100 microns or less)		Class-01-0
014U	Antimycin A		1397-94-0
015U	Barban		101-27-9
016U	Bendiocarb		22781-23-3
017U	Benomyl		17804-35-2
020U	Bromoxynil		1689-84-5
021U	2-(ptertButylphenoxy)isopropyl 2-chloroethyl sulfite		
022U	Captafol		191906
023U	Captan		133-06-2
024U	Carbaryl		63-25-3
025U	Carbofuran		1563-66-2
027U	Carbophenothion		786-19-6
028U	Chloramines		Class-08-6
029U	Chloropyrifos		2921-88-2
030U	Chlorinated dibenzofurans (other than those listed in Table 202)		Class-05-3
031U	Chlorinated dioxins (other than those listed in Table 202)		Class-05-4
032U	Chlorine gas		7782-50-5
033U	2-Chloroethanol		107-07-3
034U	3-(Chloromethyl) pyridine hydrochloride		6959-48-4
036U	4-chloromphenylenediamine		5131-60-2
037U	4-chloroophenylenediamine		95-83-0
038U	Chloroprene		126-99-8
040U	Clonitralid		1420-04-8
041U	Cobalt (when in the form of particles 100 microns or less)		Class-01-6
042U	Coumaphos		56-72-4
043U	pCresidine		120-71-8
044U	Crotoxyphos		7700-17-6
046U	Cycloheximide		66-81-9
047U	Demeton		

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
048U	2,4-Diaminoanisole sulfate		39156-41-7
049U	4,4'-Diaminodiphenyl ether		101-80-4
050U	2,4-Diaminotoluene		95-80-7
051U	Diazinon		333-41-5
052U	Dichlone		117-80-6
054U	Dichlorvos		62-73-7
055U	Dichrotophos		141-66-2
056U	Diethyl sulfate		64-67-5
057U	Dinocap		39300-45-3
058U	Dioxathion		78-34-2
059U	EPN		2104-64-5
061U	Ethion		563-12-2
063U	Fensulfothion		115-90-2
064U	Fenthion		55-38-9
065U	Fluchloralin		33245-39-5
068U	Hexamethyl phosphoramide		680-31-9
070U	Hydroquinone		123-31-9
071U	N-(2-Hydroxyethyl) ethyleneimine		1072-52-2
072U	Hypochlorite		14380-61-1
073U	Isonicotinic acid hydrazine		54-85-3
074U	Ketene		463-51-4
075U	Lactonitril		78-97-7
076U	Leptophos		21609-90-5
077U	Lithium and compounds		Class-02-0
078U	Malachite green		569-64-2
079U	Malathion		121-75-5
080U	Mestranol		
082U	4,4'-Methylenebis(2methylaniline)		838-88-0
083U	4,4'-Methylenebis(N,Ndimethylaniline)		101-61-1
086U	1-Methylnaphthalene		90-12-0
088U	Mevinphos		7786-34-7
089U	Mexacarbate		315-18-4
090U	Mirex		2385-85-5
092U	Monocrotophos		6923-22-4
093U	Mustard gas		505-60-2
094U	Naled		300-76-5
095U	1,5-Napthalenediamine		2243-62-1
096U	Nickel (when in the form of particles 100 microns or less)		Class-02-2
097U	Niridazole		61-57-4
098U	Nithiazide		139-94-6
099U	5-Nitroacenaphthene		602-87-9
100U	Nitrooanisidine		99-59-2
101U	4-Nitrobiphenyl		92-93-3
102U	Nitrofen		1836-75-5
103U	N-(4-(5-nitro-2-furanyl)2-thiazolyl)acetamide		531-82-8
104U	Nitrogen mustard		51-75-2
106U	p-Nitrosodiphenylamine		156-10-5
108U	N-nitroso-N-phenylhydroxylamine, ammonium salt		135-20-6
110U	Oxydemetonmethyl		301-12-2
111U	Paraquat		1910-42-5

REVISED APPENDIX A Michigan Disposal Waste Treatment Plant MID 000724831			
Waste Code	Waste Description	Hazard Code	CAS No.
112U	Peroxyacetic acid		79-21-0
113U	Phenazopyridine hydrochloride		136-40-3
114U	Phenesterin		
115U	Phenobarbitol		50-06-6
116U	Phenytoin		57-41-0
117U	Phenytoin sodium		630-93-0
118U	Phosazetim		4104-14-7
119U	Phosmet		732-11-6
120U	Phosphamidon		13171-21-6
121U	Piperonyl sulfoxide		120-62-7
122U	Polybrominated biphenyls (PBB)		Class-07-8
124U	Propiolactone		57-57-8
127U	Propylthiouracil		51-52-5
128U	Rotenone		83-79-4
129U	Semicarbazide		57-56-7
131U	Styrene		100-42-5
132U	Sulfallate		95-06-7
134U	TDE		72-54-8
135U	TEPP		107-49-3
136U	Terbufos		13071-79-9
137U	Tetrachlorvinphos		961-11-5
138U	4,4'-Thiodianiline		139-65-1
139U	o-Toluidine		95-53-4
140U	Triaryl phosphate esters		Class-08-4
141U	Trichlorfon		52-68-6
142U	Trifluralin		1582-09-8
143U	2,4,5-Trimethylaniline		137-17-7
144U	Triamethylphosphate		
146U	Ziram		137-30-4
147U	Azinphosethyl		2642-71-9
148U	Azinphosmethyl		86-50-0
150U	pchlorophenol		106-48-9
151U	5-chlorootoluidene		96-79-4
152U	Chlorfenuinphos		470-90-6
153U	Sodium fluoroacetate		62-74-8
154U	bis(Trinbutyl tin) oxide		56-35-9
155U	Vinylidene chloride		75-35-4
157U	3-amino-9-ethyl carbazole hydrochloride		57360-17-5
158U	Aniline hydrochloride		142-04-1
159U	Azobenzene		103-33-3
160U	1,3-Butadiene		106-99-0
161U	Butyl benzl phthalate		85-68-7
162U	1-chloro-4-phenoxybenzene		7005-72-3
163U	1-chloropropene		590-21-6
164U	P,P' DDE		72-55-9
165U	N,N'-Diethylthiourea		105-55-5
166U	1,2-Epoxybutane		106-88-7
167U	Kanechlor C		59299-51-3
168U	N-Nitrosomethylvinylamine		4549-40-0
169U	Octachlorostyrene		29082-74-4

REVISED APPENDIX A
Michigan Disposal Waste Treatment Plant
MID 000724831

Waste Code	Waste Description	Hazard Code	CAS No.
170U	Semicarbazide hydrochloride		563-41-7
171U	Tributyltin (and other salts and esters)		688-73-3
172U	1,2,3-Trichlorobenzene		87-61-6
173U	1,2,4-Trichlorobenzene		120-82-1
174U	Urethane		51-79-6
175U	Vinyl bromide		593-60-2

ATTACHMENT 9

TANK SYSTEMS PLANS AND SPECIFICATIONS

ATTACHMENT 10

TANK SYSTEM PLANS AND SPECIFICATIONS

40 CFR 270.16

AND

MI ACT 64 R504(3) AND (5)

TABLE OF CONTENTS

1.0 INTRODUCTION

The tanks that are permitted for hazardous waste storage and/or treatment are described in this section. The tanks are all involved in the waste management processes described throughout this application.

2.0 RESPONSE TO 40 CFR 270.16

270.16 (a) The design standards used for MDWTP tanks include U. L. Standard 142 and good engineering practices.

270.16 (b) All MDWTP tanks are constructed of mild steel. Waste incompatible with the materials of construction of a tank are not placed in tanks by MDWTP. Compatiblity is determinated at outlined in the WAP. Tank linings, where applicable, are described in the Tank Specifications paragraph of this section. Tank linings are also described on engineering drawing S-1, Overall Structural Plan.

270.16 (c) Tank dimensions, capacities and shell thickness are listed separately for each tank in this section on the following pages. Annually, tank shell thickness data will continue to be accumulated and maintained in MDWTP's inspection operating log.

270.16 (d) Diagrams of piping, instrumentation and process flow have been included in the engineering plans. See drawing M-1. Process Flow Diagram and Drawing Sup-8 Schematic and Details. (Refer to all drawings)

270.16 (e) Tanks A, B, C, D, E, F, G, and H (formerly Tanks 7A, 7B, 8A, 8B, 9A, 9B, 10A, 10B) are continuously monitored by on-site personnel during loading into the tank to ensure that no spills occur and that adequate freeboard is maintained at all times. The dust storage tanks are equipped with Milltronic ultrasonic level indicators which allow~~ing~~ the operator sufficient time to shut down the blower units, preventing overfilling. These units are equipped with Stevens SV-380 (or equivalent) dust collectors for venting and pollution control. Tanks 14 and 15 are checked manually by visual means, and this is accomplished by a plant operator being present at all times and having the controls within reach to shut down any feed systems to the tank. MDWTP's processing procedure demands constant attention while the plant is operating which means there is always a plant operator controlling feed systems during operation. In tanks 14 and 15, a minimum freeboard of twelve inches is maintained at all times. These tanks are also within the processing building which eliminates the possibility of over topping by wind or precipitation.

270.16 (f) MDWTP does not accept reactive wastes for treatment. Procedures for handling ignitable wastes are described in Attachment 9 "Precautions to Prevent Accidental Ignition."

3.0 DESCRIPTION OF TANKS AND MATERIALS OF CONSTRUCTION

All of the cylindrical steel tanks proposed below meet or exceed the requirements of U. L. Standard 142 and NFPA Pamphlet 30 for storage of "Flammable and Combustible Liquids". All of MDWTP's tanks are constructed of mild steel of the proper shell thickness verified by test results completed on an annual basis and logged in MDWTP'S inspection operating log. Rectangular tanks have been designed using good engineering standards, taking into consideration height, weight, width, materials of construction and specific gravity of waste to be placed into the tanks. Engineering drawings and specifications are included with this application. Also included is appropriate foundation and structural support information used in the construction of the tanks.

The inspection of the tanks are conducted on a daily, monthly, and annual basis to detect any damage, leaks, cracks, corrosion or erosion of the tank construction materials that may occur. MDWTP does not store waste in a tank that would be incompatible with the construction material of that tank. In the event there is a waste that may enhance corrosion or erosion, that waste will be stored in a tank lined with materials compatible with the corrosive waste.

A tank numbering diagram is found in the engineering drawings/plans and the Traffic Flow Plan.

<u>**Tank Specifications**</u>

Tank 1 - Steel Cylindrical Vertical Tank

Use:	Non-Liquid Waste/ Reagent Storage
Dimensions:	10' x 40' cone bottom
Shell Thickness:	1/4" steel
Venting:	Stevens SV-380 dust collector or equivalent
Corrosion Protection:	None. The dry dusts stored in this silo are not corrosive by nature.
Overfilling:	See Section 6.0. Milltronic ultrasonic level indicator.
Containment:	See Section 5.0, 350 ft by 110 ft containment area
Liner:	The concrete pad will be coated with Zypex in 2005-2006.
Vault:	No
Double-Walled Tank:	No

Tank 2 - Steel Cylindrical Vertical Tank

Use:	Non-Liquid Hazardous Waste/ Reagent Storage
Dimensions:	10' x 40' cone bottom
Shell Thickness:	1/4" steel
Venting:	Stevens SV-380 dust collector or equivalent
Corrosion Protection:	None. The dry dusts stored in this silo are not corrosive by nature.
Overfilling:	See Section 6.0. Milltronic ultrasonic level indicator.
Containment:	See Section 5.0, 350 ft by 110 ft containment area
Liner:	The concrete pad will be coated with Zypex in 2005-2006.
Vault:	No
Double-Walled Tank:	No

Tank 3 - Steel Cylindrical Vertical Tank

Use:	Non-Liquid Hazardous Waste/ Reagent Storage
Dimensions:	10' x 40' cone bottom
Shell Thickness:	1/4" steel
Venting:	Stevens SV-380 dust collector or equivalent
Corrosion Protection:	None. The dry dusts stored in this silo are not corrosive by nature.
Overfilling:	See Section 6.0. Milltronic ultrasonic level indicator.
Containment:	See Section 5.0, 350 ft by 110 ft containment area
Liner:	The concrete pad will be coated with Zypex in 2005-2006.
Vault:	No
Double-Walled Tank:	No

Tank 4 - Steel Cylindrical Vertical Tank

Use:	Non-Liquid Waste/ Reagent Storage
Dimensions:	10' x 40' cone bottom
Shell Thickness:	1/4" steel
Venting:	Stevens SV-380 dust collector or equivalent
Corrosion Protection:	None. The dry dusts stored in this silo are not corrosive by nature.
Overfilling:	See Section 6.0. Milltronic ultrasonic level indicator.
Containment:	See Section 5.0, 350 ft by 110 ft containment area
Liner:	The concrete pad will be coated with Zypex in 2005-2006.
Vault:	No
Double-Walled Tank:	No

Tank 5 - Steel Cylindrical Vertical Tank

Use:	Non-Liquid Waste/ Reagent Storage
Dimensions:	10' x 40' cone bottom
Shell Thickness:	1/4" steel
Venting:	Stevens SV-380 dust collector or equivalent
Corrosion Protection:	None. The dry dusts stored in this silo are not corrosive by nature.
Overfilling:	See Section 6.0 Milltronic ultrasonic level indicator.
Containment:	See Section 5.0, 350 ft by 110 ft containment area
Liner:	The concrete pad will be coated with Zypex in 2005-2006.
Vault:	No
Double-Walled Tank:	No

Tank 6 - Steel Cylindrical Vertical Tank

Use:	Non-Liquid Waste/ Reagent Storage
Dimensions:	10' x 40' cone bottom
Shell Thickness:	1/4" steel
Venting:	Stevens SV-380 dust collector or equivalent
Corrosion Protection:	None. The dry dusts stored in this silo are not corrosive by nature.
Overfilling:	See Section 6.0. Milltronic ultrasonic level indicator.
Containment:	See Section 5.0, 350 ft by 110 ft containment area
Liner:	The concrete pad will be coated with Zypex in 2005-2006.
Vault:	No
Double-Walled Tank:	No

Tank A- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 14 and untreated waste directly as shipments.
Dimensions:	14'7 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	267 yards (6" freeboard).
Shell Thickness:	Minimum 1" steel
Venting:	Tank is enclosed in a building ventilated by a dust air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 7910 ft or 110 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes.
Double-Walled Tank:	No

Tank B- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 14 and untreated waste directly as shipments.
Dimensions:	14'7 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	267 yards (6" freeboard).
Shell Thickness:	Minimum 1" steel
Venting:	Tank is enclosed in a building ventilated by a dust and VOC air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 7910 ft or 110 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank C- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 14 and untreated waste directly as shipments.
Dimensions:	11'11 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	216 yards (6" freeboard).
Shell Thickness:	Minimum 1" steel
Venting:	Tank is enclosed in a building ventilated by a dust air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 6553 ft or 112 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank D - Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 14 and untreated waste directly as shipments.
Dimensions:	11'11 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	216 yards (6" freeboard).
Shell Thickness:	Minimum 1" steel
Venting:	Tank is enclosed in a building ventilated by a dust and VOC air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 6553 ft or 112 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank E- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 15 and untreated waste directly as shipments.
Dimensions:	11'11 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	216 yards (6" freeboard).
Shell Thickness:	Minimum 3/4" steel
Venting:	Tank is enclosed in a building ventilated by a dust and VOC air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 6553 ft or 112 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank F- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 15 and untreated waste directly as shipments.
Dimensions:	11'11 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	216 yards (6" freeboard)
Shell Thickness:	Minimum 3/4" steel
Venting:	Tank is enclosed in a building ventilated by a dust and VOC air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 6553 ft or 112 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank G- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 15 and untreated waste directly as shipments.
Dimensions:	14'7 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	267 yards (6" freeboard)
Shell Thickness:	Minimum 3/4" steel
Venting:	Tank is enclosed in a building ventilated by a dust and VOC air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 7910 ft or 110 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank H- Steel Rectangular Tank

Use:	Tank is used to receive treated wastes from Tank 15 and untreated waste directly as shipments.
Dimensions:	14'7 1/2" W x 34'2 1/2" L x 14'6" D
Capacity:	267 yards (6" freeboard)
Shell Thickness:	Minimum 3/4" steel
Venting:	Tank is enclosed in a building ventilated by a dust and VOC air pollution control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. All loading operations are manually inspected by MDWTP personnel.
Containment:	See Section 5.0, holds 7910 ft or 110 % of tank capacity
Liner:	None. The tank is designed as a steel tank within a concrete containment structure. The concrete containment provides secondary containment.
Vault:	Yes
Double-Walled Tank:	No

Tank 14 - Pugmill Mixer

Use:	Processing of dusts, liquids and sludges.
Dimensions:	4.5' W x 10' L x 3' D
Capacity:	1/2 cubic yard agitating capacity
Shell:	3/16" - 5/16" thick steel
Venting:	Connected to the dust control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. Manual - visual inspection during processing. A flow through mixing device that is continuously gravity fed and unloaded, during processing.
Containment:	See Section 5.0, holds 100 % of largest pugmill
Liner:	Abrasion liners in mixing chamber; 3/16" steel
Vault:	No
Double-Walled Tank:	No

Tank 15 - Pugmill Mixer

Use:	Processing of dusts, liquids and sludges.
Dimensions:	4.5' W x 10' L x 3' D
Capacity:	1/2 cubic yard agitating capacity
Shell:	3/16" - 5/16" thick steel
Venting:	Connected to the dust and VOC control system.
Corrosion Protection:	None.
Overfilling:	See Section 6.0. Manual - visual inspection during processing. A flow through mixing device that is continuously gravity fed and unloaded, during processing.
Containment:	See Section 5.0, holds 100 % of largest pugmill
Liner:	Abrasion liners in mixing chamber; 3/16" steel
Vault:	No
Double-Walled Tank:	No

Tank 16 - Steel Cylindrical Vertical Tank

Use:	Liquid waste storage, waste to be stabilized.
Dimensions:	20' x 12' with 6' 45 degree cone bottom
Capacity:	20,000 gallons
Shell Thickness:	1/4" steel
Venting:	Emergency relief vent, pressure-vacuum vent
Corrosion Protection:	None.
Overfilling:	See Section 6.0. Milltronics ultrasonic level indicator.
Containment:	See Section 5.0, holds 48,380 gallons or 242 % of the largest tank
Liner:	Plasite 4300, by Wisconsin Protective Coating.
Vault:	No
Double-Walled Tank:	No

Tank 17 - Steel Cylindrical Vertical Tank

Use:	Liquid waste storage, waste to be stabilized.
Dimensions:	20' x 12' with 6' 45 degree cone bottom
Capacity:	20,000 gallons
Shell Thickness:	1/4" steel
Venting:	Emergency relief vent, pressure-vacuum vent
Corrosion Protection:	None.
Overfilling:	See Section 6.0. Milltronics ultrasonic level indicator.
Containment:	See Section 5.0, holds 48,380 gallons or 242 % of the largest tank
Liner:	Plasite 4300, by Wisconsin Protective Coating.
Vault:	No
Double-Walled Tank:	No

Tank 18 - Steel Cylindrical Vertical Tank

Use:	Liquid waste storage, waste to be stabilized.
Dimensions:	20' x 12' with 6' 45 degree cone bottom
Capacity:	20,000 gallons
Shell Thickness:	1/4" steel
Venting:	Emergency relief vent, pressure-vacuum vent
Corrosion Protection:	None.
Overfilling:	See Section 6.0. Milltronics ultrasonic level indicator.
Containment:	See Section 5.0, holds 48,380 gallons or 242 % of the largest tank Liner: Plasite 4300, by Wisconsin Protective Coating.
Vault:	No
Double-Walled Tank:	No

Tank 19 - Steel Cylindrical Vertical Tank

Use:	Liquid waste storage, waste to be stabilized.
Dimensions:	20' x 12' with 6' 45 degree cone bottom
Capacity:	20,000 gallons
Shell Thickness:	1/4" steel
Venting:	Emergency relief vent, pressure-vacuum vent
Corrosion Protection:	None.
Overfilling:	See Section 6.0. Milltronics ultrasonic level indicator.
Containment:	See Section 5.0, holds 48,380 gallons or 242 % of the largest tank.
Liner:	Plasite 4300, by Wisconsin Protective Coating.
Vault:	No
Double-Walled Tank:	No

Tank 25 - Vertical Fiberglass Tank

Use:	Storage of sodium hypochlorite, directly feeds Tank 14 or Tank 15. Prior to the introduction of hazardous wastes, Tank 25 is rinsed and emptied. All wastes are evaluated for tank liner compatibility and waste-waste compatibility prior to acceptance.
Dimensions:	12' x 25'
Capacity:	20,000 gallons
Shell:	Fiberglass
Venting:	Emergency relief vent
Corrosion Protection:	Corrosion Protection is built into the tank. Fiber Reinforced Polymer (FRP) construction is corrosion resistant to anything that might be placed in the tank.
Overfilling:	See Section 6.0. Milltronics ultrasonic level indicator with tuning fork style level switch positioned to detect high level. Level switch activates a lamp.
Containment:	See Section 5.0, holds 30,450 gallons or 152% of the largest tank.
Liner:	Plasite 4300, by Wisconsin Protective Coating.
Vault:	No
Double-Walled Tank:	No

Tank 27 - Vertical Fiberglass Tank

Use:	Storage of sodium hypochlorite, directly feeds Tank 14 or Tank 15. Prior to the introduction of hazardous wastes, Tank 27 is rinsed and emptied. All wastes are evaluated for tank liner compatibility and waste-waste compatibility prior to acceptance.
Dimensions:	12' x 25'
Capacity:	20,000 gallons
Shell:	Fiberglass
Venting:	Emergency relief vent
Corrosion Protection:	Corrosion Protection is built into the tank. Fiber Reinforced Polymer (FRP) construction is corrosion resistant to anything that might be placed in the tank.
Overfilling:	See Section 6.0. Milltronics ultrasonic level indicator with tuning fork style level switch positioned to detect high level. Level switch activates a lamp.
Containment:	See Section 5.0, holds 30,450 gallons or 152% of the largest tank
Liner:	Plasite 4300, by Wisconsin Protective Coating.
Vault:	No
Double-Walled Tank:	No

4.0 DESCRIPTION OF TANK SYSTEMS AND OPERATION

4.1 Dust Storage Silos: Tanks 1 - 6

Tanks 2 and 3 may receive and store hazardous wastes or reagents and feed Tank 14 (the west pugmill). Tank 1 may receive and store non-hazardous waste or reagents and feed Tank 14 (the west pugmill). Tanks 4 and 5 may receive and store non-hazardous wastes or reagents and feed Tank 15 (the east pugmill). Tank 6 may receive and store hazardous wastes or reagents and feed Tank 15 (the east pugmill). Other than the difference mentioned in the first two sentences, the tanks are filled and emptied in an identical fashion.

Dust storage silos are designed to receive dusts for treatment and waste stabilization reagents. Dusts are transported in bulk pneumatic tankers to MDWTP. After the load is accepted, pneumatic tankers are placed adjacent to the silo to be filled. A blower line is connected to the pneumatic tanker and to the silo. The blower is turned on, forcing approximately 1000 cfm through the pneumatic tanker, fluffing and conveying dust through the discharge hose to the silo fill line to a discharge point within the silo. Exhaust gasses escape through a baghouse, dusts are trapped and fall into the silo.

Dust is fed from the base of each silo through a variable speed rotary vane feeder into a screw conveyor feeding a pugmill. Feed rates are varied to obtain proper treatment ratios for different types of wastes. Dusts may be fed from one or all silos simultaneously.

4.2 Pugmills: Tanks 14 and 15

Tank 14 receives dusts from Tanks 1, 2, and 3, liquids, sludges and slurries from Tanks 16, 17, 18, 19, 25 and 27; discharging a treated waste slurry to Tanks A, B, C and D.

Tank 15 receives dusts from Tanks 4, 5, and 6, liquids, sludges and slurries from Tanks 16, 17, 18, 19, 25 and 27; discharging a treated waste slurry to Tanks E, F, G and H.

Tanks 14 and 15 are pugmill mixers manufactured by Davis-Built Fabricating Company.

The pugmills are a flow through device. Wastes are fed into the north end of each pugmill. The waste is mixed by paddles mounted on counter rotating shafts running the length of the pugmill, then gravity discharged to a screw conveyor beneath the pugmill mixer. The screw conveyor carries treated waste to the treatment tanks.

The pugmill mixers are considered tanks for classification purposes only, their construction, operation and monitoring are not easily described in terms of a tank.

An operator first starts the pugmill, then initiates dust feed from the silos followed immediately by liquid feed from Tanks 16, 17, 18, 19, 25 or 27. Variable speed adjustments for all feeds are present at a control panel adjacent to the pugmill. Feeds are adjusted to predetermined levels and processing of wastes begin. The treatment operation is shut down in the reverse order described above.

In event of a spill, each pugmill room contains a floor drain, connected to the north trench drain located along the north retaining wall.

4.3 Storage/Treatment Tanks A – H (Formerly Tanks 7 – 10).

Tanks A, B, C, D all receive wastes treated in Tank 14. In addition, Tanks A -D receive liquid and solid waste directly from bulk trailers and containers.

Tanks E, F, G, H all receive wastes treated in Tank 15. In addition, Tanks E - H receive liquid and solid waste directly from bulk trailers and containers.

Adequate freeboard is maintained in all compartments and tanks at all times.

After treatment, waste is removed from the tanks with an excavator and placed into a vessel for transport to the final disposal facility. Post-treatment testing may be performed before or after the waste is removed from tanks A - H, but is performed before wastes are transported to the final disposal facility.

Tanks A - H are rectangular steel tanks constructed completely within a rectangular concrete tank. The outer concrete tanks acts as secondary containment. The tanks and secondary containment slope to the north and center of each tank. A monitoring well is located at the low point of each secondary containment unit.

If it is determined that waste has entered the secondary containment, the tank is emptied and surveyed for the leak, the leak is repaired, the repair is tested, the repair is ceritified by an independent engineer, and the tank is placed back into service. Engineering Plan, Schedules and Details, shows the detail for a secondary containment monitoring well.

4.5 Waste to be Treated; Tanks 16, 17, 18, 19, 25 and 27

Tanks 16, 17, 18, 19, 25 and 27 are located in the tank farm in the northeast corner of the ECSA. These tanks are filled by one of two pumps located in the unloading station along the north retaining wall between the NCSA and the ECSA. The valving, filling, and discharge options available for Tanks 16, 17, 18 and 19 are described schematically on Engineering Plan PP-1, Process Flow Diagram. The valving, filling and discharge options available for Tanks 25 and 27 are described schematically on Engineering Plan Sup-8, Schematic and Details.

A typical filling procedure takes place as follows:

1. Tank to be filled is selected by the laboratory.
2. Tank level and log sheets are checked to ensure there is sufficient room to hold the load.
3. Pump to be used is selected.
4. Valving between the pump and tank is properly aligned.
5. The tanker truck is connected to the pump.
6. The open valve line between the pump and tank is physically retraced. All valves tied off the main feed line are checked and placed in the closed position.

7. The truck valve is opened and the pump started, delivering waste or reagents to the selected tank.
8. After the truck is emptied, the pump is shut down.
9. The suction valve adjacent to the pump is closed.
10. The truck valve is closed and flexible connection removed between the pump and truck.
11. A 1.5" clean water flush line is attached to the suction end of the pump.
12. The suction valve is opened and the pump started to flush out the line.
13. Tank numbers are stenciled on each tank. The word "fill" or "discharge", tanks numbers and direction arrows are stenciled on all fill and discharge lines dedicated to an individual tank. Stencils are placed in a location easily seen by the operator.

The contents of the storage tanks can be transferred to one of the pugmills (14 or 15) following an identical sequence. For the transfer sequence, the tanker trucks discharge line is simply replaced with the rigid plumbing between the tanks discharge line and the selected pump. A tank log is maintained for each tank.

5.0 SECONDARY CONTAINMENT SYSTEMS

Tanks 1 - 6 - Steel Cylindrical Vertical Tank

<u>Request for variance from secondary containment requirements</u>

Silos 1 - 6 are designed for and limited to storage of granular or dusty materials, typically containing less than 5% moisture. Materials placed into the silos are typically inorganically contaminated dusts and for Silos 2, 3 and 6 these may include hazardous waste. Other products used in the stabilzation process are also stored in the silos including, but not limited to, cement kiln flue dust, lime kiln flue dust, powdered silicates and fly ash.

Silos 1 - 6 are elevated approximately 10 feet above their concrete footings and the concrete floor of the plant. A canopy covers the silos and prevents precipitation from falling on the concrete plant floor. The concrete floor has been constructed with PVC waterstops in all joints and is exceptionally strong, able to withstand pressures in excess of 4000 psi. The silos and all ancillary systems are formally inspected each day the plant is operated. In addition, constant activity around the silos provides for continuous visual inspection of the area. Any detected leak or spill would be reported immediately, allowing for rapid correction of the problem, typically in less than 24 hours. The tanks are also tested once per year to determine shell thickness, providing the opportunity for preventive maintenance if deterioration of the tank integrity is detected.

If a leak or spill of the solid material were to occur, it would fall down onto the concrete plant floor. In the worst case, the leak would be detected 24 hours later (though immediate detection is much more likely). The spilled material would be vacuumed up and the silo taken out of service for repair. Spilled materials would not migrate away from the area due to their solid nature and a lack of precipitation. The silos are central to the plant preventing any spilled materials from migrating off the paved area to threaten surface or groundwater supplies. In addition to being over 100 feet from the south edge of concrete paving and given that the concrete is sloped south to north, directing all liquids towards the north retaining wall, the entire concrete floor of the plant serves as secondary containment . Dispersion of spilled material is further prevented by the waste holding building to the south, the pugmill room to the east and the retaining walls to the west and north.

The addition of a secondary containment curb would not add to protection already provided by the existing concrete floor, structures and canopy. As such, MDWTP respectfully requests that a variance be granted according to the provisions of 40 CFR 264.193(g).

Tanks A - H – (Formerly Tanks 7 – 10) Steel Rectangular Tank

The seoondary containment system consists of a sealed concrete vault. The concrete is compatible with the materials stored in the Tank. The concrete vault floor is a minimum of 8" thick with steel rebar reinforcing. The vault has a leak detection system. The leak detection system consists of the vault floors being sloped to one corner. The corner is piped to a monitoring well where a draft pressure switch will detect a rising liquid level. The draft pressure switch is wired to a lamp, which indicates the presence of liquids. The lamps are checked each day.

The secondary containment is a vault. The secondary containment system is sealed against precipitation. The vault was constructed with water stop at each joint. An impervious coating was placed on the concrete at the time of construction. The secondary containment does not have a vent system to prevent the build-up of combustible gases. It is not known if the secondary containment was constructied with an external moisture barrier.

Tanks 14 & 15 - Pug Mill Mixer(s)

The secondary containment system consists of a concrete floor covered by a roof. The concrete has been treated with Xypex to make the concrete impervious and is compatible with the materials stored in the tank. The concrete floor is 8" thick with steel rebar reinforcing. The secondary containment area is inspected every day for leaks. The secondary containment area is not sloped since the material does nto lfow and cannot be pumped.

The secondary containment has a liner. The secondary containment system is designed to store more than 100% of the largest mill. Since the secondary containment system is under roof, there is no reserve capacity required for precipitation. An annual inspection is performed to check for cracks and containment integrity. Since the Tank is no more than 5 feet above the containment area and at its highest point material is surrounded by a 350 ft by 110 ft containment area, any spilled material is effectively contained.

Tanks 16 - 19 - Steel Cylindrical Vertical Tank

The Secondary containment system consists of a concrete floor with 2.6 ft high concrete sides. The conrete has been coated with Elastoliner to make it impervious to wastes stored in the Tank. Elastoliner is compatible with all materials stored in the Tank. The concrete floor is 8 inches thick with steel rebar reinforcing. The secondary containment area is inspected every day for damage and leaks. The secondary containment area is sloped to a sump from which liquids can be pumped out. Liquid accumulated in the secondary containment structure is removed upon detection. Accumulated iquid is transferred to one of the storage tanks or to a tanker truck or a vacuum truck. Waste is then transported to MDWTP tanks or the wastewater pre-treatment plant.

The secondary containment has a liner. The secondary containment system is designed to contain 48,380 gallons, which is 242% of the largest tank in the tank farm. The secondary containment system is not under roof. A 100 year, 24 hour storm would add 7,700 gallons to the secondary containment system so there is adequate reserve capacity for precipitation. An annual inspection is performed to check for cracks and containment integrity. The Tanks 16 – 19 are each 33 ft tall. The outside retaining wall is at least 16-20 ft tall, depending on the location of the tank. Other tanks of the same height are located on the other three sides, so any leaked material is effectively contained.

Tanks 25 & 27 - Fiberglass Vertical Tanks

Corrosion Protection: The tank was designed to be corrosion resistant as manufactured. The fiberglass reinforced polymer construction incorporates a Nexus Veil to resist corrosion from any waste placed in the Tank.

Secondary Containment: The secondary containment system consists of a concrete floor with 3 foot 6 inch high concrete sides. The concrete has been coated with Elastoliner to make it impervious to wastes stored in the Tank. Elastoliner is compatible with all materials stored in the Tank. The concrete floor is 8 inches thick with steel rebar reinforcing. The secondary containment area is inspected every day for damage and leaks. The secondary containment area is sloped to a sump from which liquids can be pumped out.

This secondary containment system is lined with Elastoliner and has sufficient capacity to retain any liquid leaked into it. The secondary containment system is designed to contain 30,450 gallons, which is 152% of the largest tank in the tank farm. The secondary containment system is not under roof. A 100 year, 24 hour storm would add 3,458 gallons to the secondary containment system so there is adequate reserve capacity for precipitation. An annual inspection is performed to check for cracks and containment integrity.

Tanks 25 & 27 are each 27 feet tall.

Tank 25:

On the north side, the Tank is located at least 10 feet from a 20 foot high concrete retaining wall. On the west side, the Tank is located 17 feet from the secondary containment wall. On the east side, the Tank is located 1 foot from the secondary containment wall that has a second secondary containment. The fourth side of Tank is blocked by a tank of equal height, so any leaked material is effectively contained.

Tank 27:

On the north side, the Tank is blocked by a tank of equal height. On the west side, the Tank is located 17 feet from the secondary containment wall. On the east side, the Tank is located 1 foot from the secondary containment wall that has a second secondary containment. On the south side of the Tank, the Tank is located 2 feet from the secondary containment wall.

6.0 OVERFILL PROTECTION AND PROCEDURES

Tanks 1 - 6 - Steel Cylindrical Vertical Tank

This overfill controls for Tanks 1- 6 are the same. Milltronic ultrasonic level indicators.

Tanks A - H – (Formerly Tanks 7 – 10) Steel Rectangular Tank

The overfill controls for Tanks A – H. Loading and unloading operations are constantly monitored by MDWTP personnel to ensure against overfilling and the maintenance of adequate freeboard. The Spotter also maintains a written Tank Log (also known as the Batch Ticket) of all materials received to a specific treatment tank and can keep a running total of waste volumes received to each tank. Each entry on the Tank Log is initialed by the spotter to affirm the material was properly received to the identified treatment tank and that no spill or release occurred. If the equipment operator observes a condition which does not provide sufficient freeboard to allow proper mixing within a treatment tank, the operator will cease mixing.

Tanks 14 & 15 - Pug Mill Mixer(s)

The overfill control for Tanks 14 and 15 is the same. The pug mill mixer is constantly monitored during processing operations. The unit is a flow-thorough mixing device that is continuously gravity fed and unloaded during processing.

Tanks 16 - 19 - Steel Cylindrical Vertical Tank

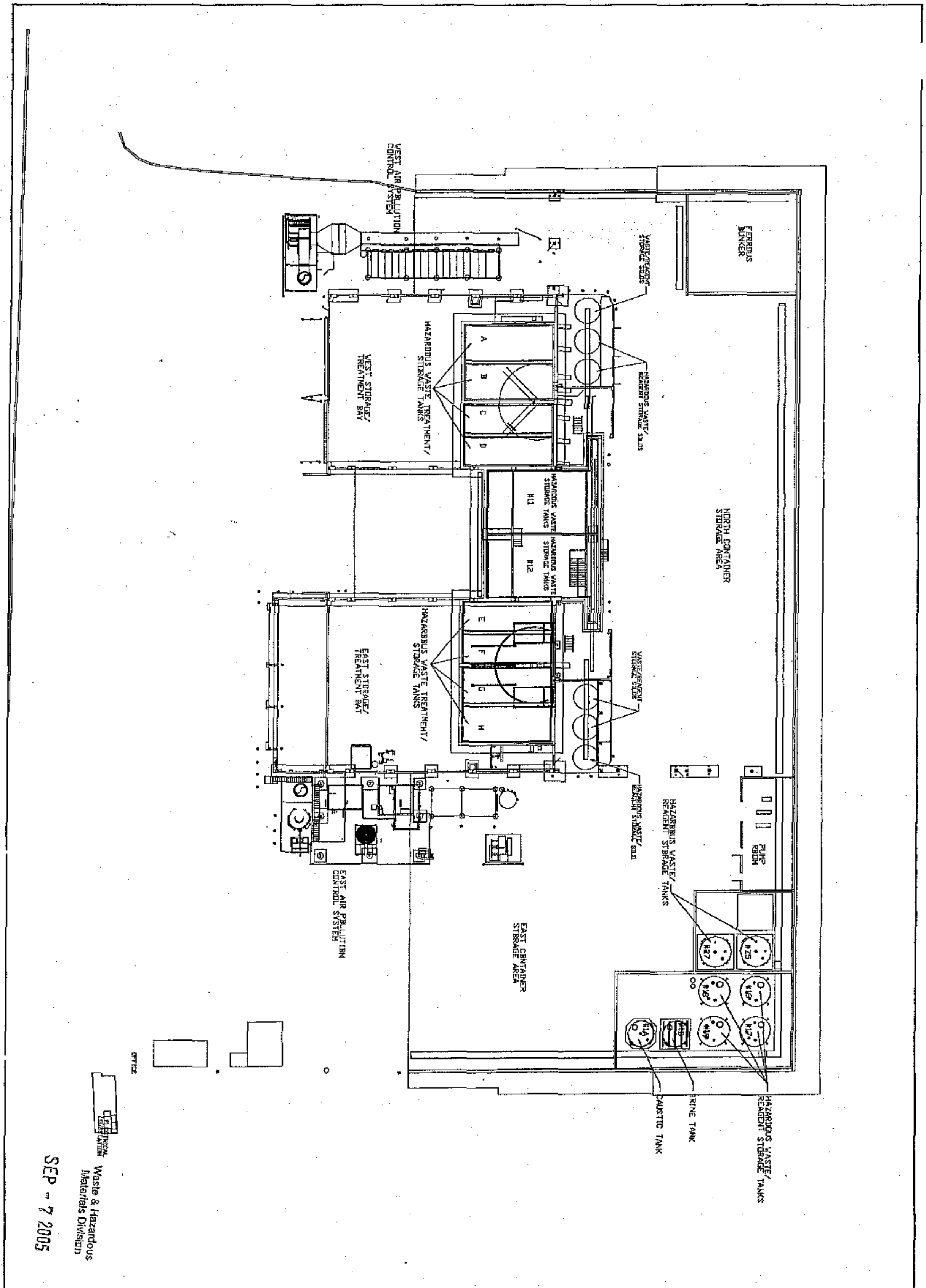
The overfill controls for Tanks 16 – 19 is the same. Milltronic ultrasonic level indicators.

Tanks 25 & 27 - Fiberglass Vertical Tank

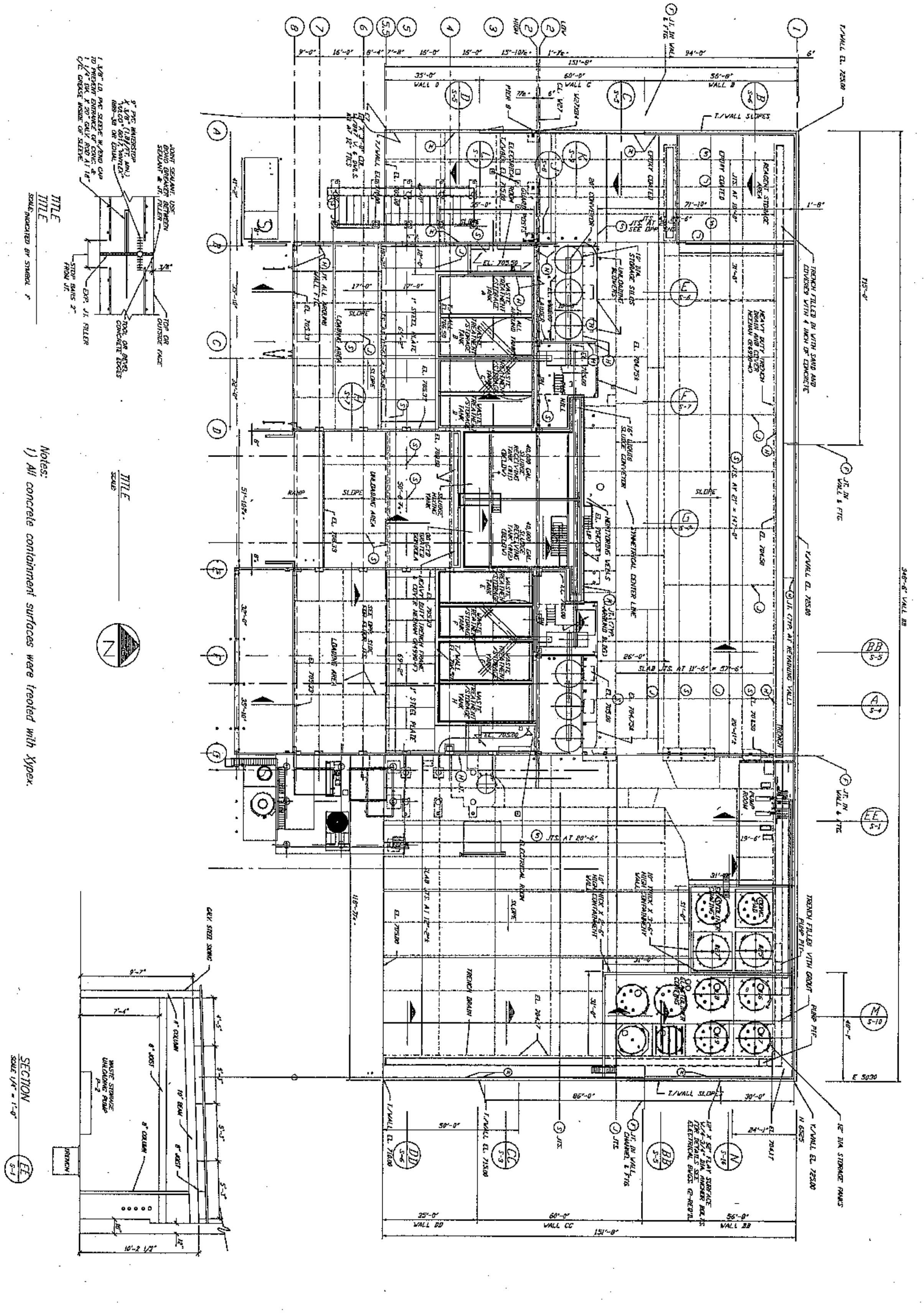
The overfill control for Tanks 25 and 27 is the the same. Milltronic ultrasonic level indicators with tuning fork style level switch, which activates a lamp.

7.0 TREATMENT PROCEDURES

MDWTP treats and stores hazardous and non-hazardous liquids and solids. See the WAP, Section 2.3 "Waste Management Units" for additional discussion.



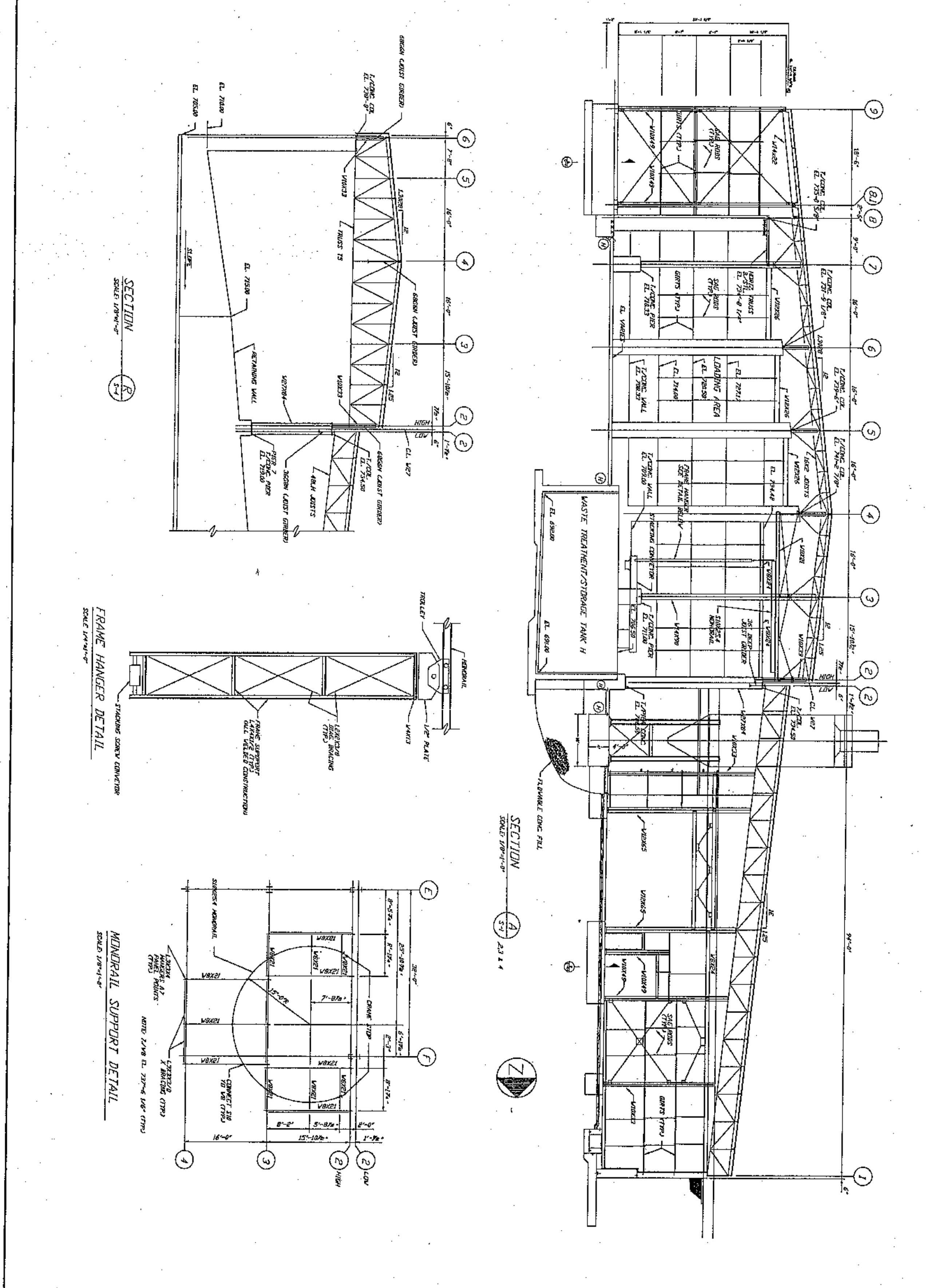
A0	MICHIGAN DISPOSAL WASTE TREATMENT PLANT ARCHITECTURAL	PROJ. FILE MDI	FILENAME: PLTA0	REVISIONS A 11/12/02 Concrete Curb Update B 8/22/05 Remove Proposed Capacity from Tank Farm C D E	THE ENVIRONMENTAL QUALITY COMPANY 36255 MICHIGAN AVENUE, WAYNE, MI 48184 TEL. (734) 329-8000
		DATE: 10/1/02	SCALE: 1/16"=1'-0"		
	FACILITY DRAWING	SHEET ___ OF ___	DRN BY: CAG		



S1	MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE: LIC	FILENAME: PHS1	REVISIONS: A 4/27/04 License Update
	OVERALL PLAN	DATE: 3/4/95	SCALE: 1/16"=1'-0"	
		SHEET ___ of ___	DRN BY: CAG	

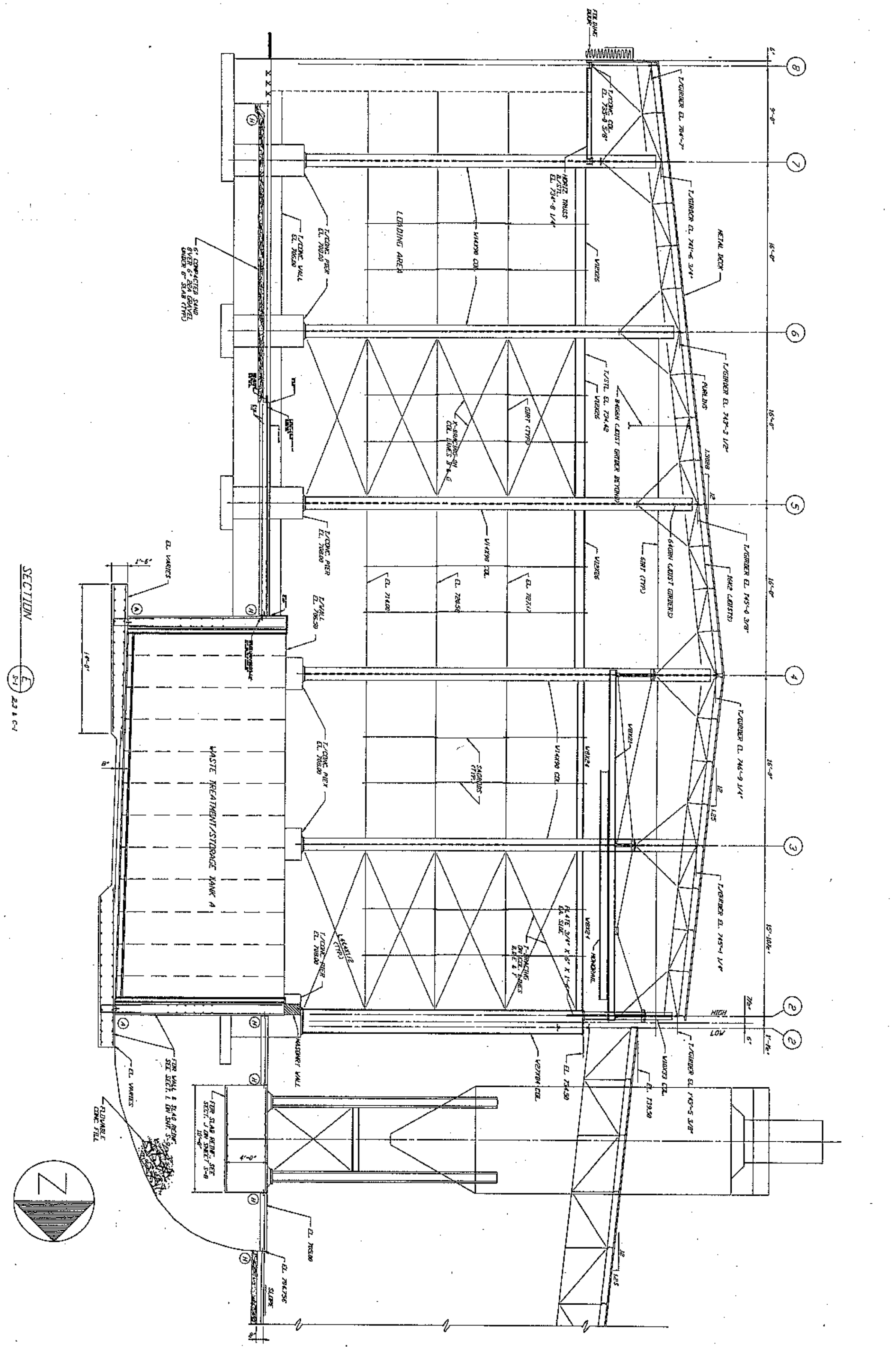
THE ENVIRONMENTAL QUALITY COMPANY

36255 MICHIGAN AVENUE, WAYNE, MI 48184 TEL (734) 329-8000



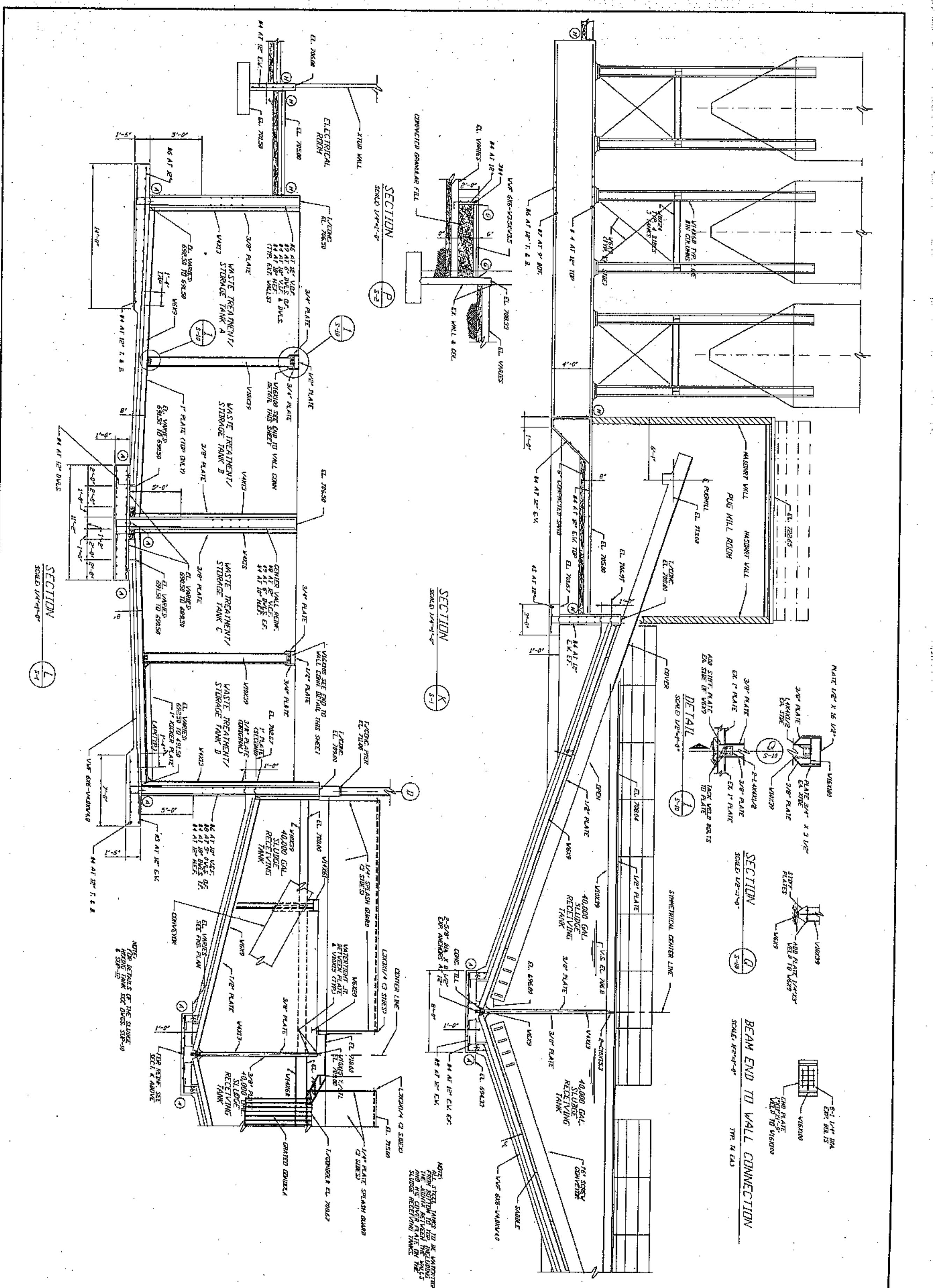
S-5	MICHIGAN DISPOSAL WASTE TREATMENT PLANT WEST TREATMENT/STORAGE BAY	PROJ. FILE: MDI.	FILENAME: PIIS5	REVISIONS: A; B 3/3/04 License App Update; C; D; E
	MONORAIL SUPPORT DETAILS AND SECTIONS	DATE: 3/4/95 SHEET ___ OF ___	SCALE: 1/4"=1'-0" DRN BY: CAG	

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000



S6	MICHIGAN DISPOSAL WASTE TREATMENT PLANT EAST WASTE TREATMENT & STORAGE BAY	PROJ. FILE LIC	FILENAME PHS6	REVISIONS	A	4/6/04 Floor Update
		DATE:3/4/95	SCALE:1/4"=1'-0"		B	
	ELEVATION SECTIONS	SHEET ___ OF ___	DRN BY: CAG		C	
					D	
					E	

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

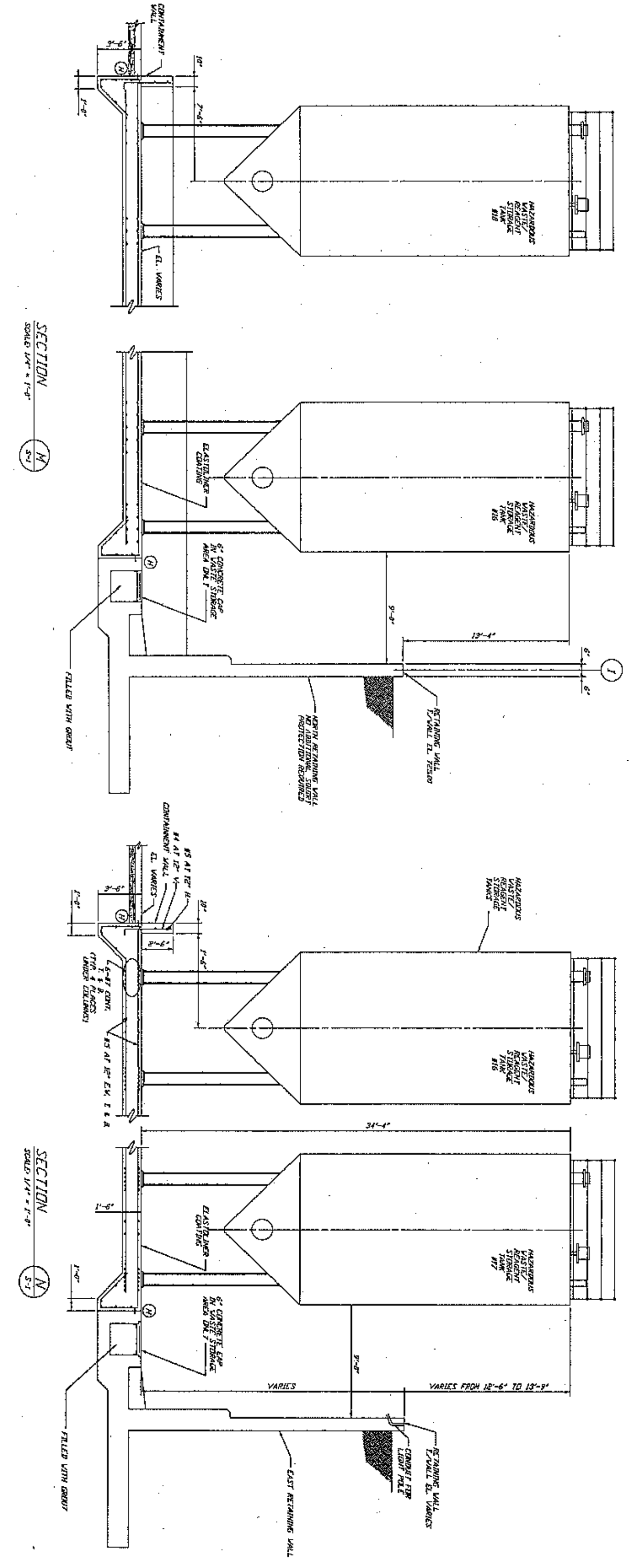


S9	MICHIGAN DISPOSAL WASTE TREATMENT PLANT SLUDGE RECEIVING TANK #11	PROJ. FILE: LIC	FILENAME: PllS9
		DATE: 3/4/95	SCALE: 1/4"=1'-0"
	STRUCTURAL SECTIONS	SHEET ___ OF ___	DRN BY: CAG

REVISIONS

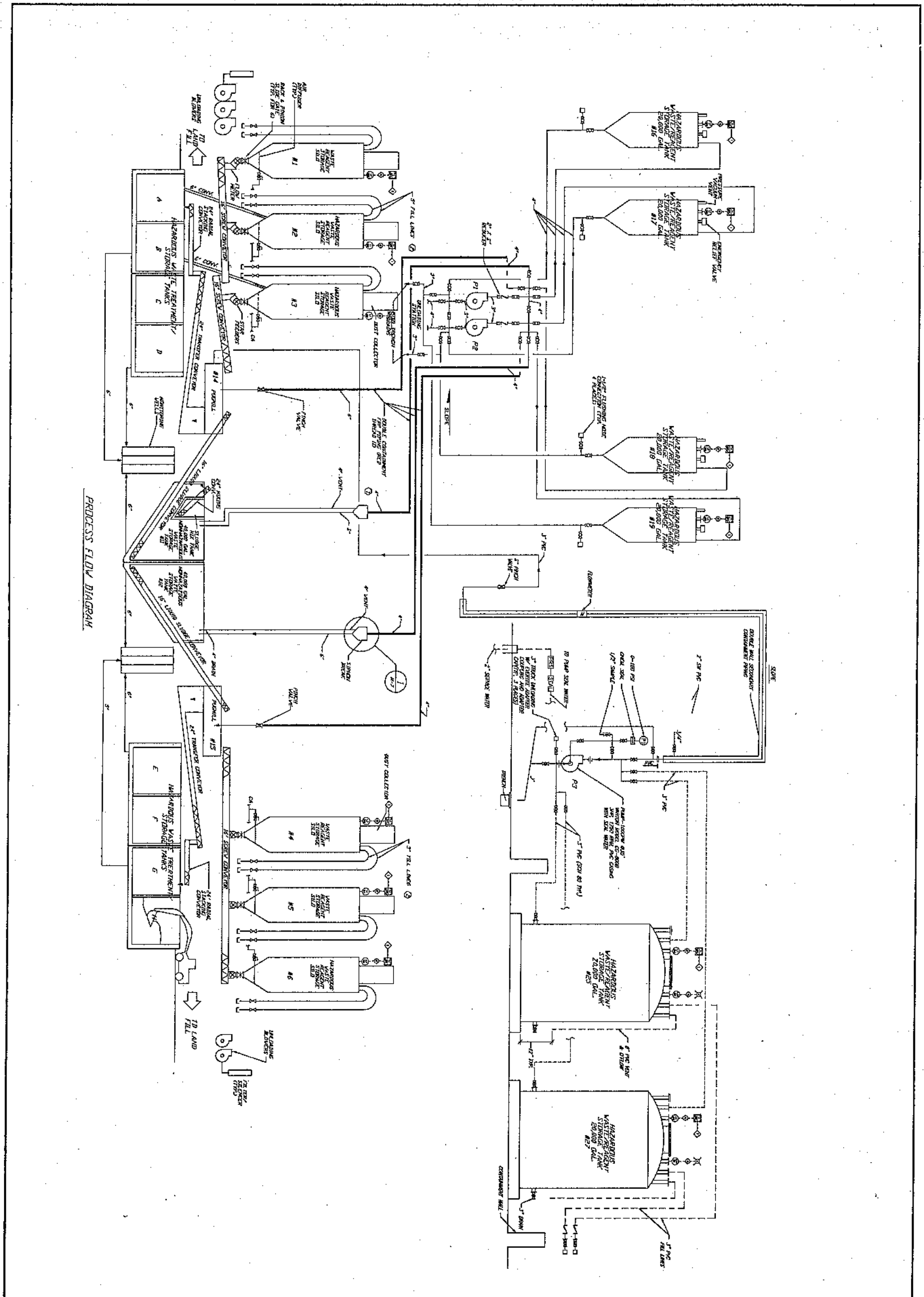
THE ENVIRONMENTAL QUALITY COMPANY

36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



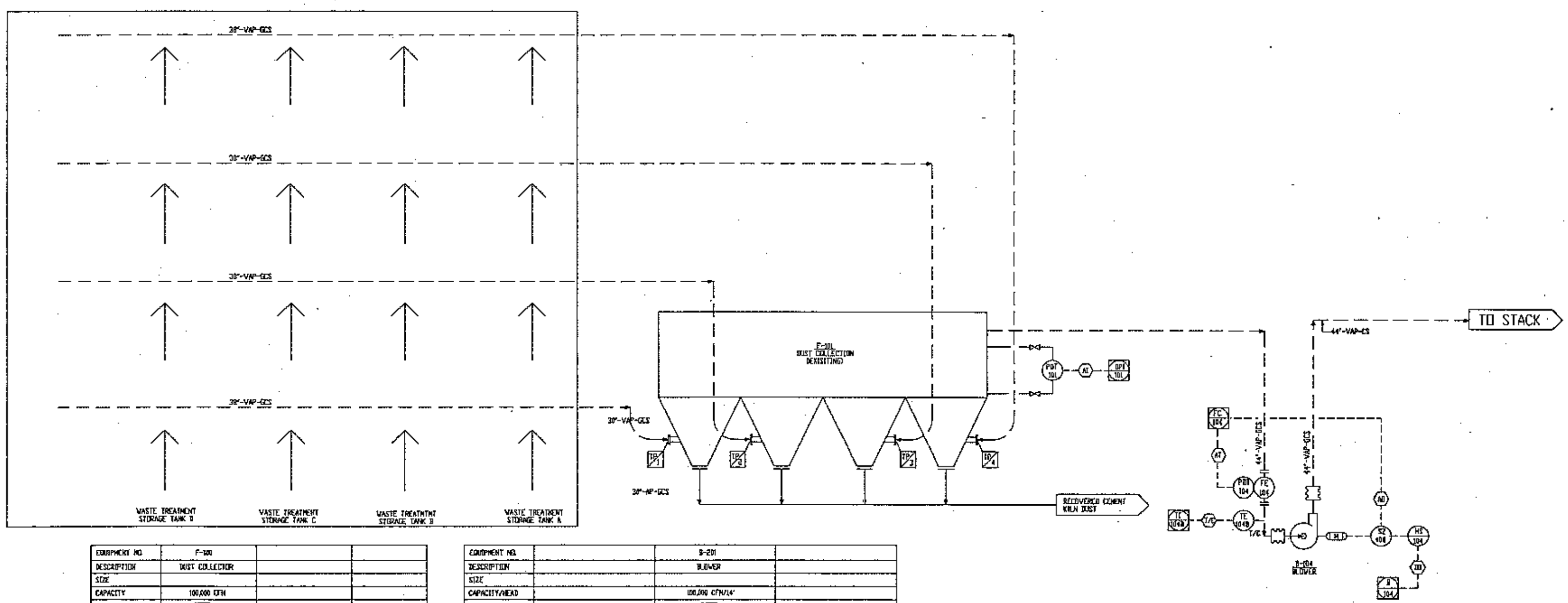
S10	MICHIGAN DISPOSAL WASTE TREATMENT PLANT TANK FARM	PROJ. FILE PLANT	FILENAME: PLTS10	REVISIONS: A 1/26/02 UPDATED; B; C; D; E
		DATE:3/4/95	SCALE:1/4" = 1'-0"	
	STRUCTURAL SECTION	SHEET__ OF __	DRN BY: CAG	

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



PP2	MICHIGAN DISPOSAL WASTE TREATMENT PLANT WASTE TREATMENT & STORAGE BAYS	PROJ. FILE LIC	FILENAME: PItPP2	REVISIONS		
				A	8/19/02	Relabeled Silos
				B		
	WASTE TREATMENT P&ID	DATE: 8/19/02	SCALE: None	C		
		SHEET ___ OF ___	DRN BY: CAG	D		
				E		

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



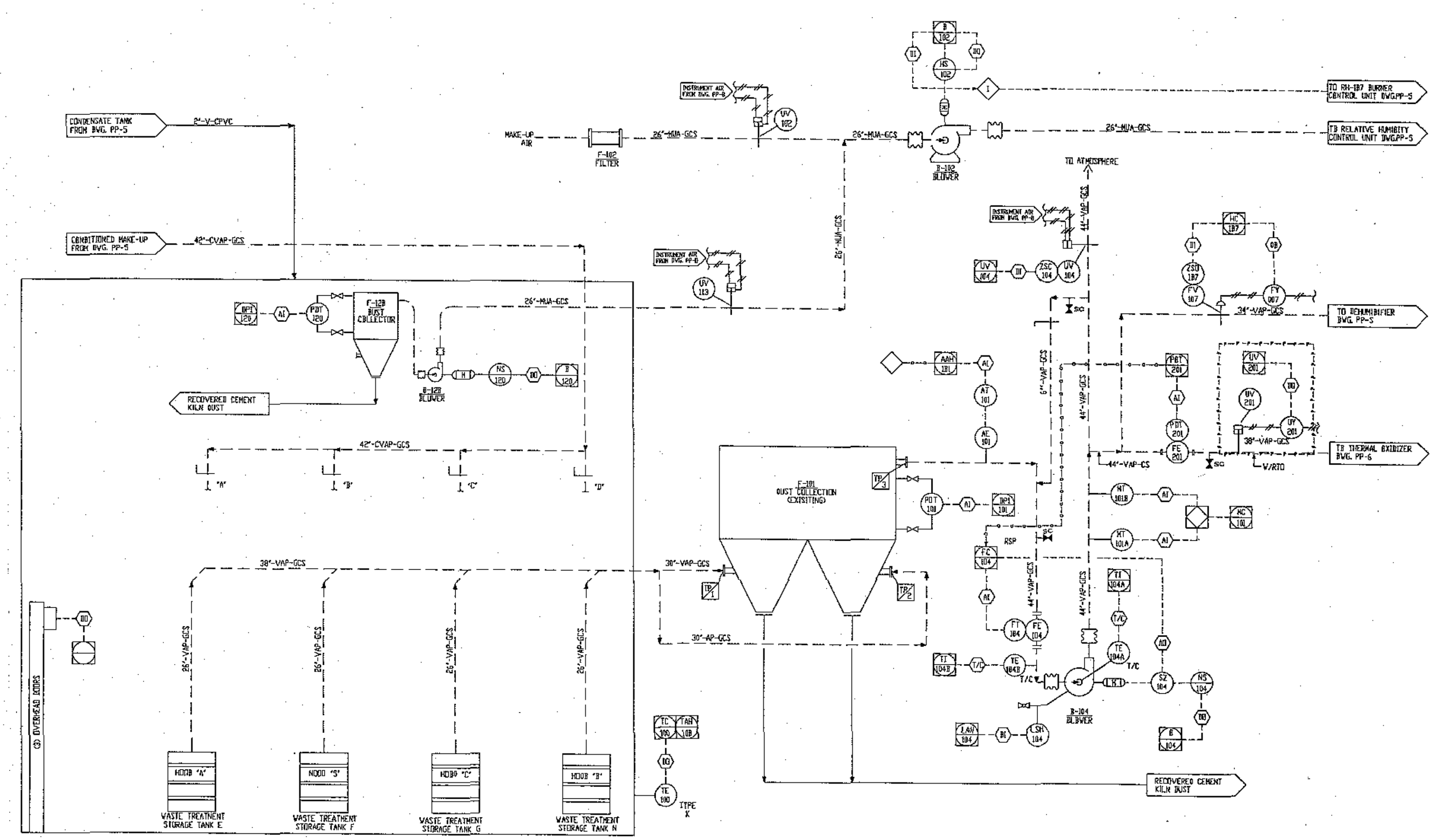
EQUIPMENT NO.	F-100		
DESCRIPTION	DUST COLLECTOR		
SIZE			
CAPACITY	100,000 CFM		
MATERIAL	STEEL		
DESIGN P/T	21" VAC		
COMMENTS	EXISTING		

EQUIPMENT NO.		B-201	
DESCRIPTION		BLOWER	
SIZE			
CAPACITY/HEAD		100,000 CFM/14"	
MATERIAL		STEEL	
HP RPM		300/1400	
MANUF./MODEL #		NEW YORK BLOWER	
COMMENTS			

MICHIGAN DISPOSAL WASTE TREATMENT PLANT WEST WASTE TREATMENT & STORAGE BAY	PROJ. FILE LIC	FILENAME: PIHPP3	REVISIONS A B C D E
AIR POLLUTION CONTROL SYSTEM P&ID	DATE: 4/1/04 SHEET ___ OF ___	SCALE: None DRN BY: CAG	

PP3

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



EQUIPMENT NO.	F-101	F-102	F-120
DESCRIPTION	DUST COLLECTOR	FILTER	DUST COLLECTOR
SIZE		24" X 24" X 4"	
CAPACITY	50,000 CFM	12,000 CFM	12,000 CFM
MATERIAL	STEEL		STEEL
DESIGN P/T	21" VAC	1" DIFF. PRESS.	UNK
COMMENTS	EXISTING		PURCHASED USED

EQUIPMENT NO.	B-102	B-104	B-120
DESCRIPTION	BLOWER	BLOWER	BLOWER
SIZE			
CAPACITY/HEAD	12,000 CFM/4.25'	41,000 CFM/22.9'	12,000 CFM/8'
MATERIAL	STEEL	STEEL	STEEL
HP RPM	112/1419	170/1814	50/2760
MANUF./MODEL #	CHICAGO/36A	CHICAGO/44.2	FAN ENGINEERING/FR 3
COMMENTS			PURCHASED USED

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

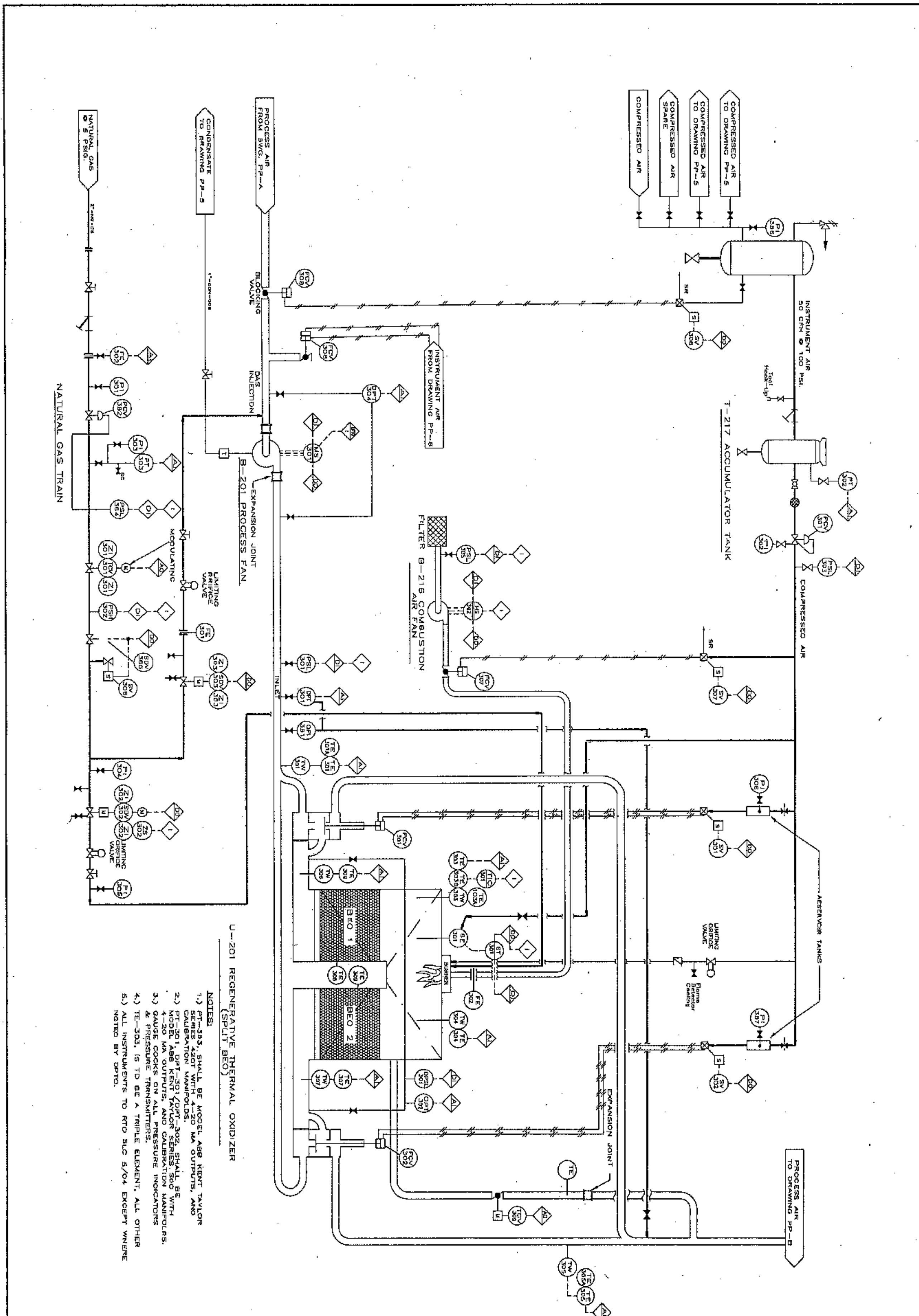
REVISIONS		
A	4/23/98	Issued For Bid
B	2/24/00	As Built
C		
D		
E		

FILENAME: PIIPP4
SCALE: None
DRN BY: EAG

PROJ. FILE: LIC
DATE: 2/10/40
SHEET ___ OF ___

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
EAST WASTE TREATMENT & STORAGE BAY
VENTILATION SYSTEM P&ID

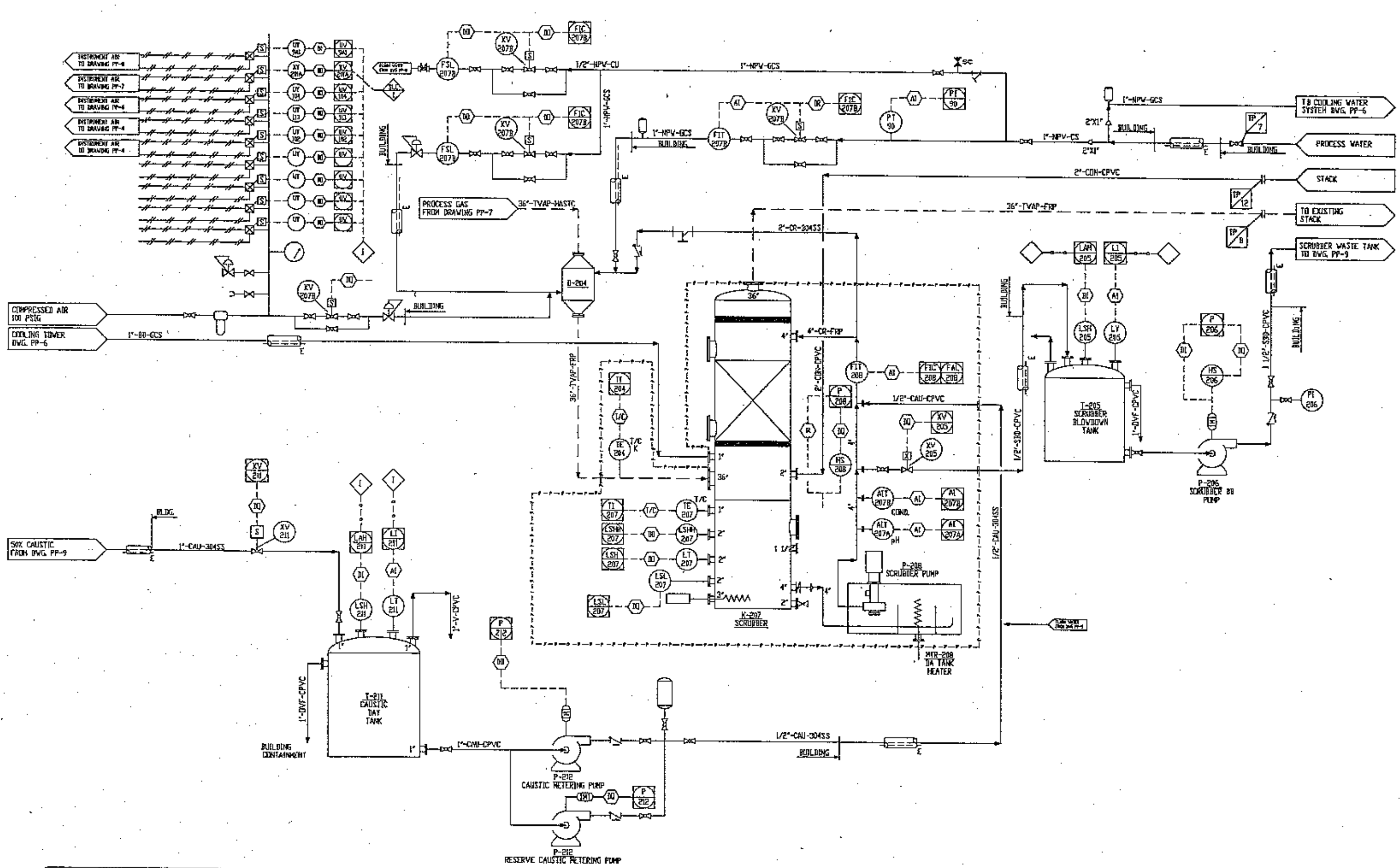
PP4



PP7	MICHIGAN DISPOSAL WASTE TREATMENT PLANT REGENERATIVE THERMAL OXIDIZER SYSTEM REGENERATIVE THERMAL OXIDIZER P&ID	PROJ. FILE: LIC DATE: 4/4/00 SHEET ___ OF ___	FILENAME: PltPP7 SCALE: None DRN BY: CAG

REVISIONS		
A	4/4/00	As Built
B		
C		
D		
E		

EQ
THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL (734) 329-8000



EQUIPMENT NO.	B-201	B-216	P-206	P-208	P-212
DESCRIPTION	PROCESS BLOWER	COMBUSTION AIR BLOWER	SCRUBBER BD PUMP	SCRUBBER RECYCLE PUMP	CAUSTIC MU PUMP
SIZE					
CAPACITY/HEAD	27,500/25.2"		15 GPM/		
MATERIAL					
HP RPM	125/	7.5/			
MANUF./MODEL #	CHICAGO/3300			FYBROC	
COMMENTS				W/ SCRUBBER	W/ SCRUBBER

EQUIPMENT NO.	U-201	Y-217	Y-211	Q-204	V-207	HTR-215
DESCRIPTION	THERMAL OXIDIZER	ACCUMULATOR TANK	CAUSTIC DAY TANK	QUENCH	SCRUBBER	SCRUBBER HEATER
SIZE					96" DIA.	4 KW
CAPACITY						
MATERIAL					FRP	
DESIGN P/T						
COMMENTS						

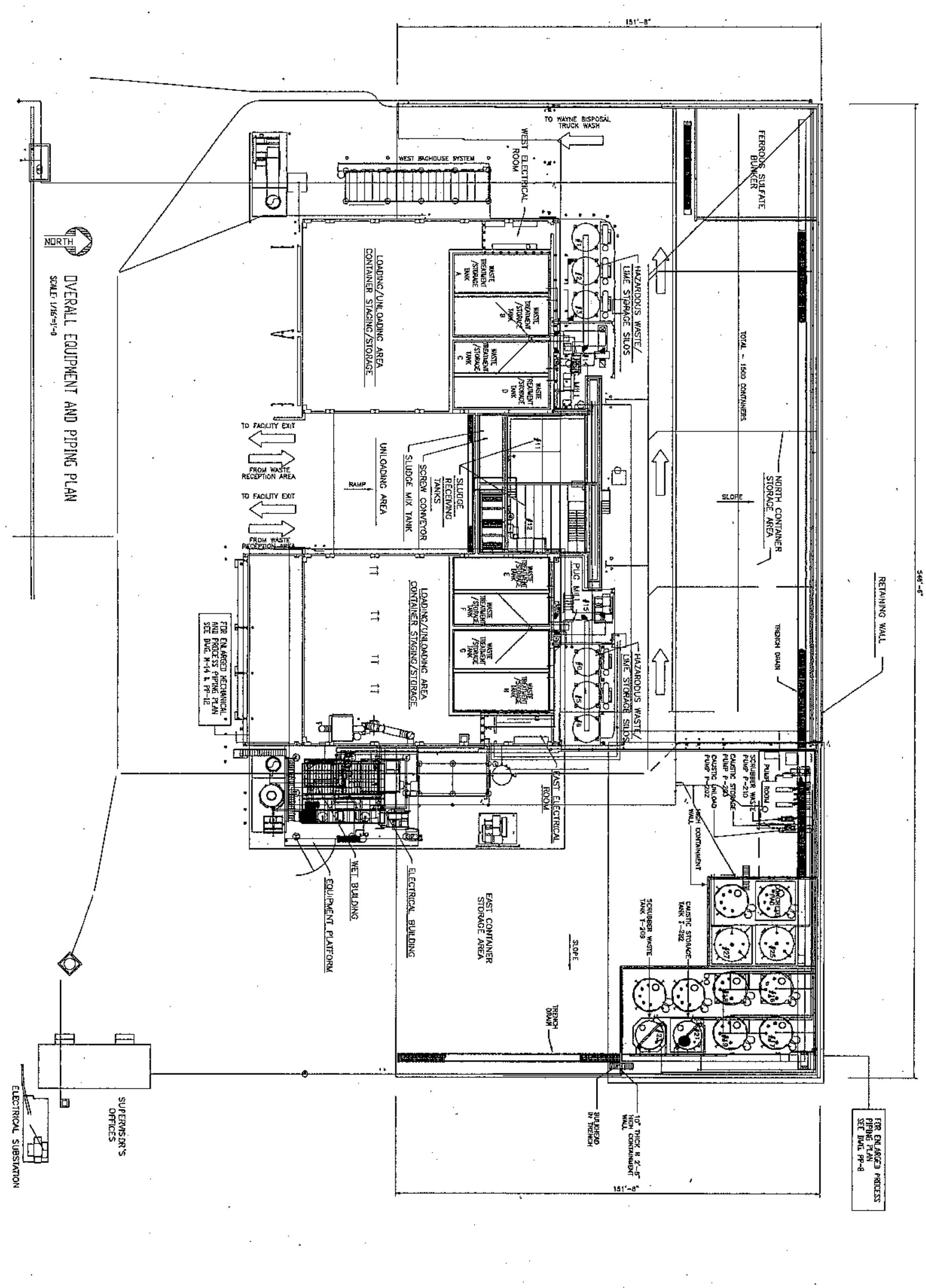
MICHIGAN DISPOSAL WASTE TREATMENT PLANT
REGENERATIVE THERMAL OXIDIZER SYSTEM

As Built

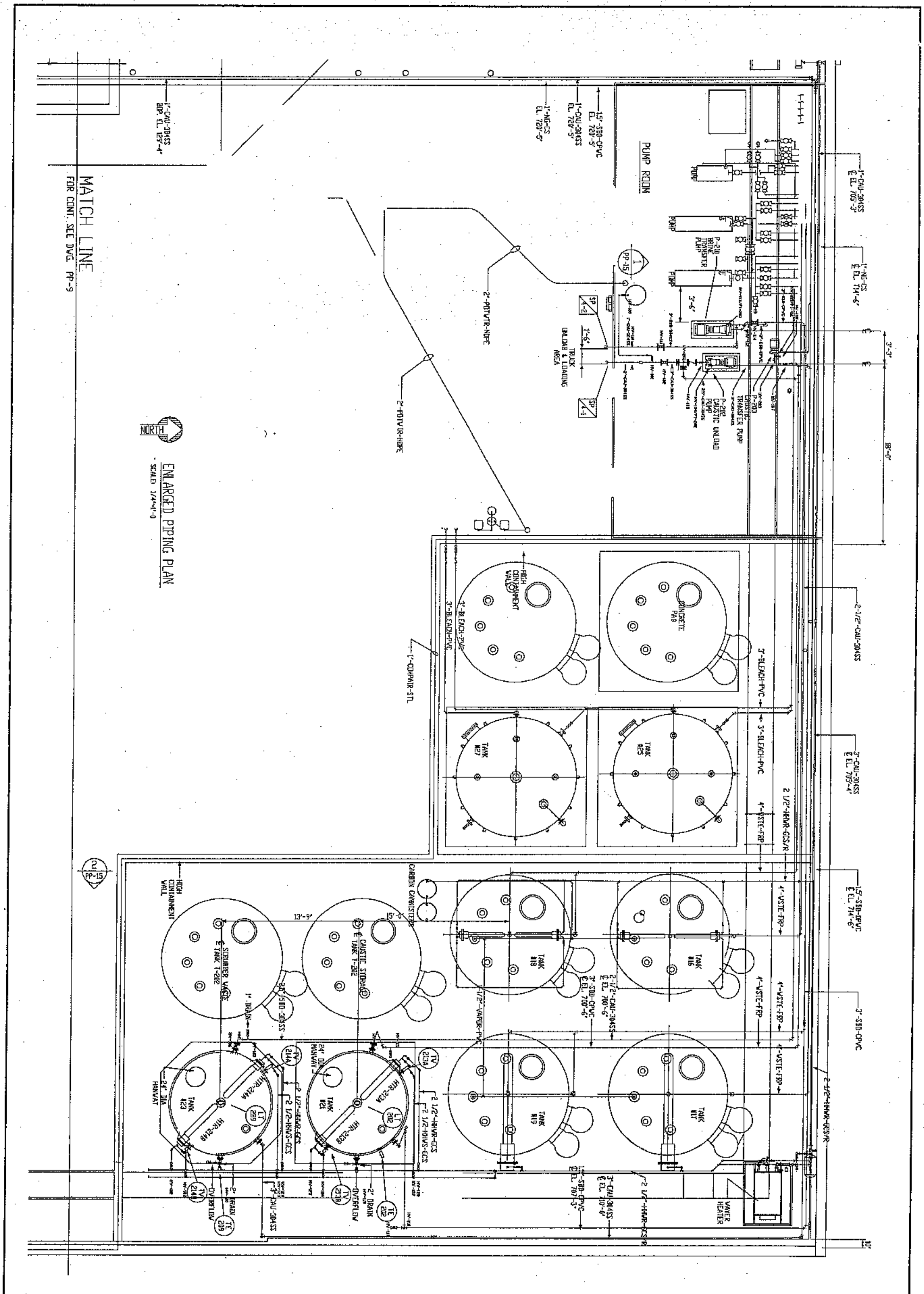
PROJ. FILE	FILENAME:	REVISIONS		
LIC	PIIPP8	A	4/20/98	Issued For Bid
DATE: 2/11/00	SCALE: None	B	2/29/00	2/29/00
SHEET ___ OF ___	DRN BY: CAG	C		
		D		
		E		

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000

PP8



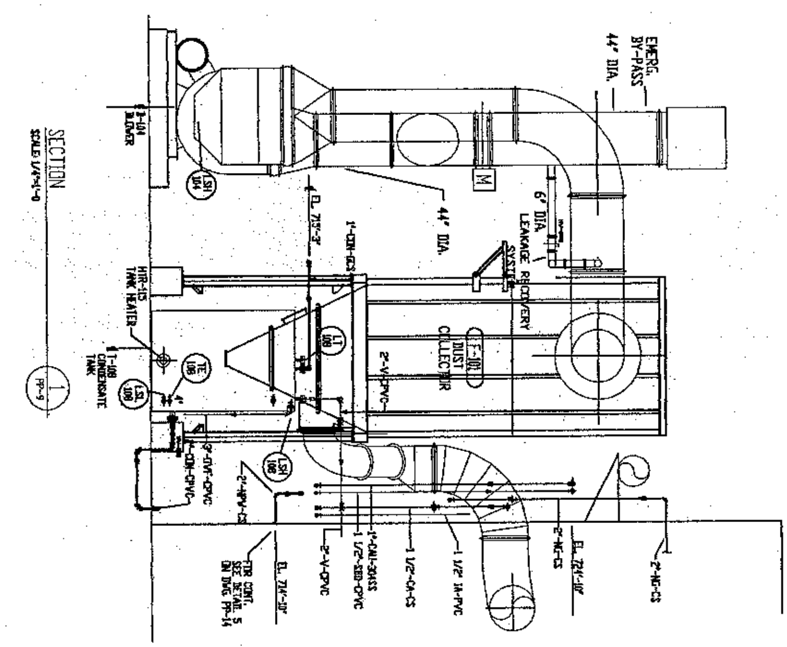
PP10	MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE LIC	FILENAME: PHPP10	REVISIONS A 4/20/98 Issued For Bid; B 2/24/00 As Built; C; D; E		THE ENVIRONMENTAL QUALITY COMPANY 36255 MICHIGAN AVENUE, WAYNE, MI. 48184 TEL. (7) 329-8060
	OVERALL EQUIPMENT AND PIPING PLAN	DATE: 2/11/00 SHEET ___ OF ___	SCALE: 1/16"=1'-0" DRN BY: CAG			

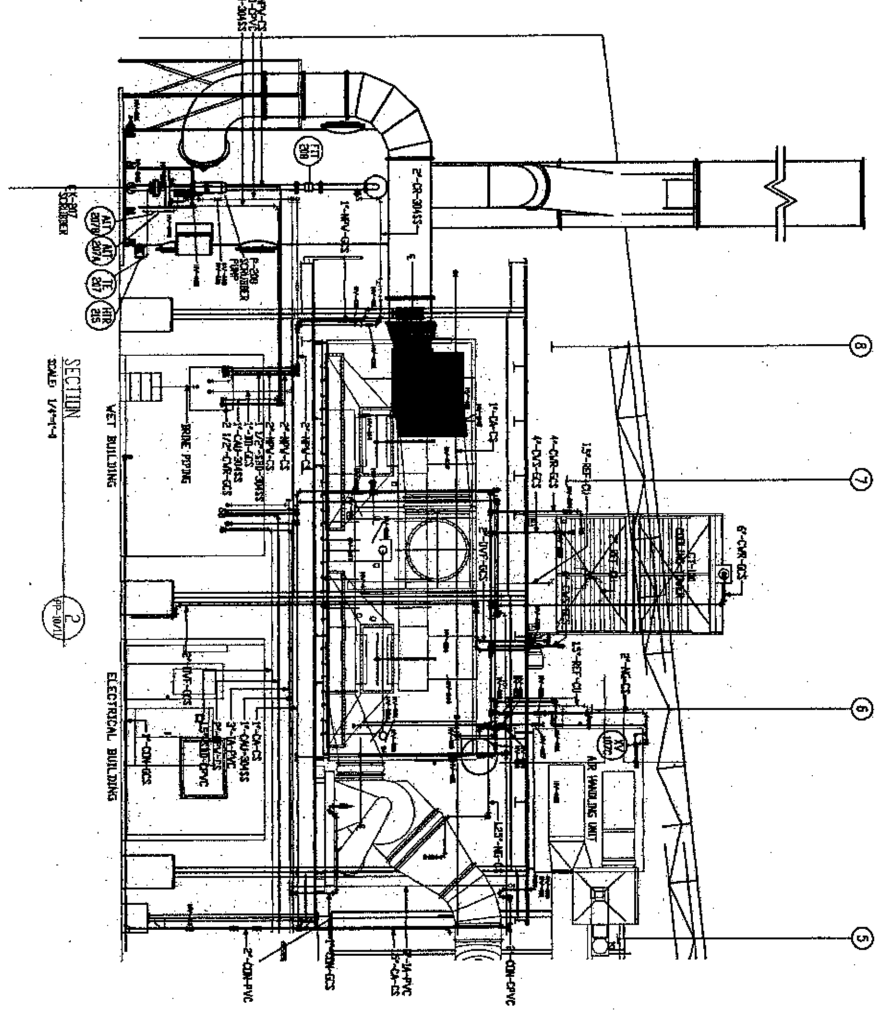


MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE LIC	FILENAME: PIIPP11	REVISIONS	A	4/20/98	Issued for Bid
				B	2/23/00	As Built
TANK FARM PIPING PLAN	DATE: 2/14/98	SCALE: 1/4"=1'-0"		C		
	SHEET ___ OF ___	DRN BY: CAG		D		
				E		

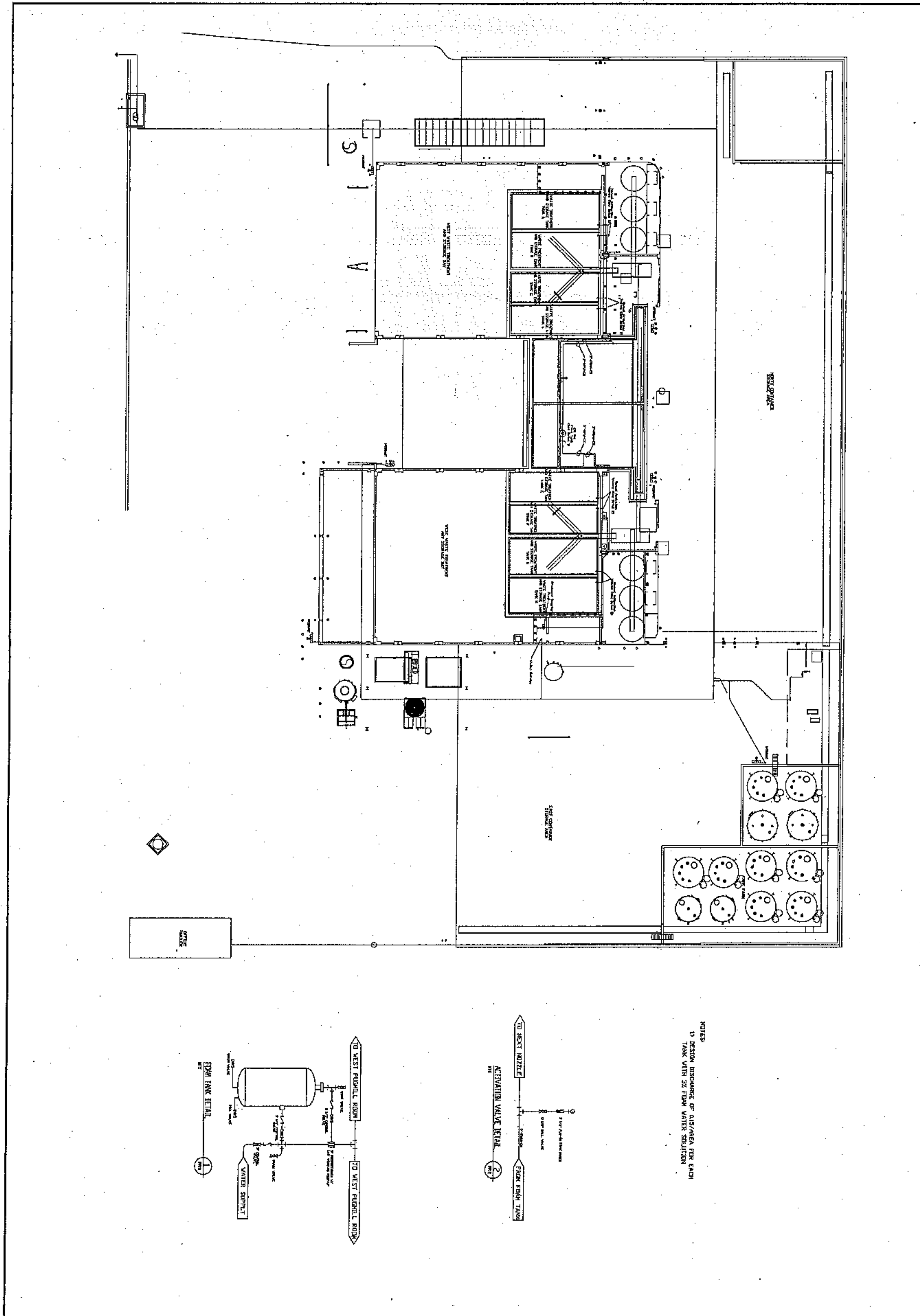
PP11

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000





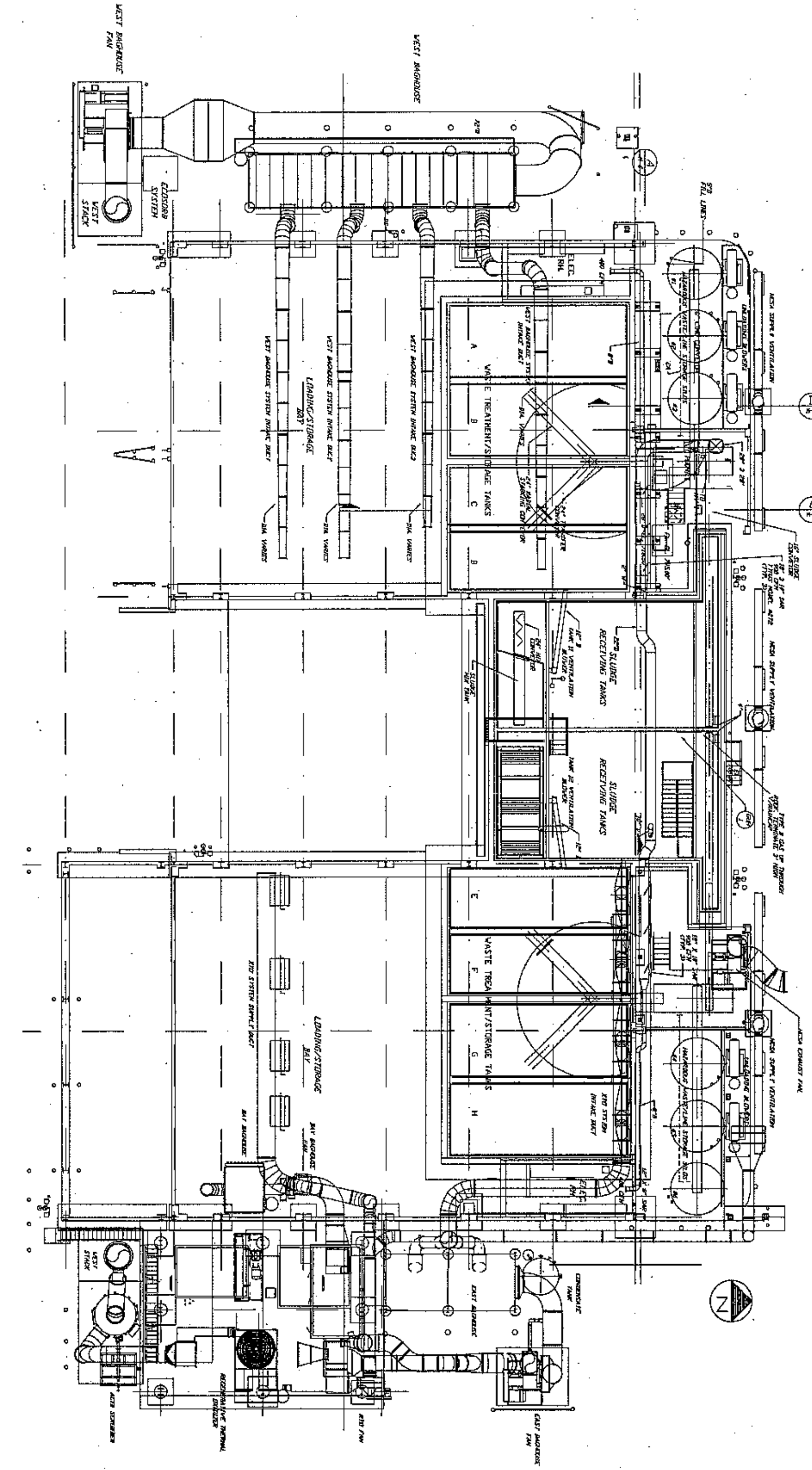
PP16	MICHIGAN DISPOSAL WASTE TREATMENT PLANT REGENERATIVE THERMAL OXIDIZER SYSTEM	PROJ. FILE LIC	FILENAME: PHPP16	REVISIONS: A 4/20/98 Issued For Bid; B 2/28/00 As Built; C; D; E	THE ENVIRONMENTAL QUALITY COMPANY 38235 MICHIGAN AVENUE, WAYNE, MI 48184 TEL. (734) 329-8000
	PIPING PLAN – ELEVATION	DATE: 2/15/00 SHEET ___ OF ___	SCALE: 1/4"=1'-0" DRN BY: CAG		



PP19	MICHIGAN DISPOSAL WASTE TREATMENT PLANT	PROJ. FILE: LIC	FILENAME: PIIPP19
		DATE: 4/29/04	SCALE: 1/8"=1'-0"
	FIRE SUPPRESSION SYSTEM	SHEET ___ OF ___	DRN BY: CAG

REVISIONS: A, B, C, D, E

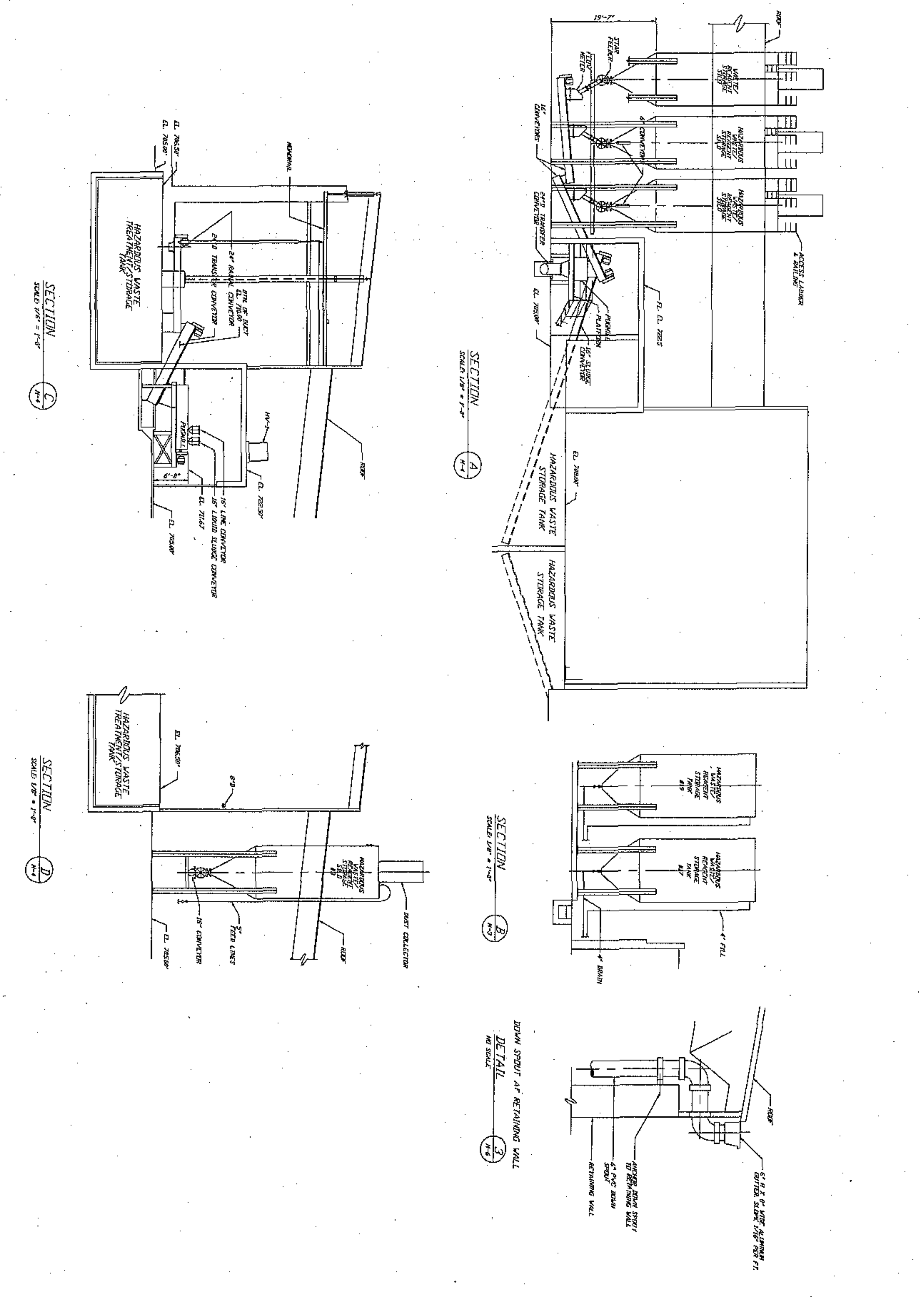
THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL (734) 329-8000



M3	MICHIGAN DISPOSAL WASTE TREATMENT PLANT WASTE TREATMENT & STORAGE BAY	PROJ. FILE LIC	FILENAME: PIIM3	REVISIONS: A 4/27/04 Updated; B; C; D; E
	OVERALL PLAN	DATE: 2/17/04 SHEET ___ OF ___	SCALE: 1/10"=1'-0" DRN BY: CAG	

THE ENVIRONMENTAL QUALITY COMPANY

36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000

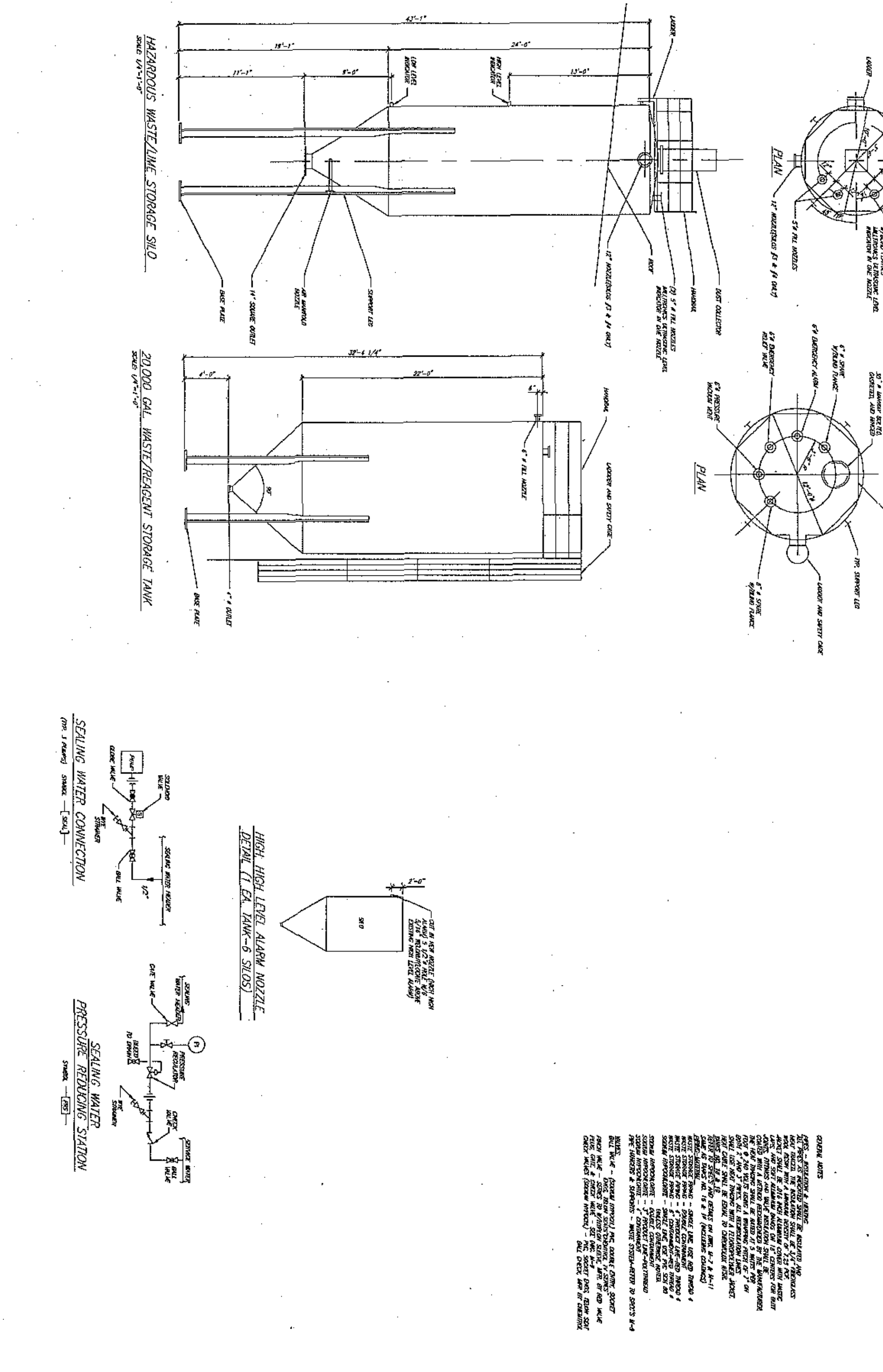


MICHIGAN DISPOSAL WASTE TREATMENT PLANT MECHANICAL	PROJ. FILE Plant	FILENAME: PIIM5
SECTIONS 1	DATE: 8/19/02	SCALE: 1/8" = 1'
	SHEET ___ OF ___	DRN BY: CAG

REVISIONS		
A	8/19/02	Relabeled Shop
B		
C		
D		
E		

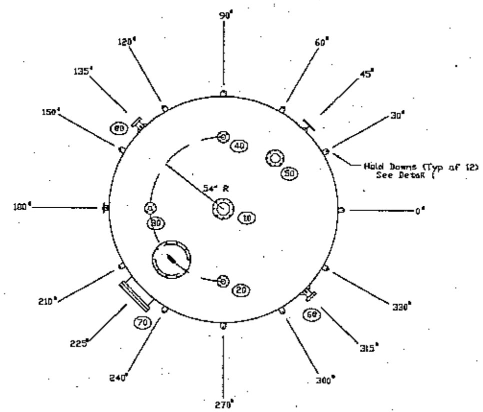
M5

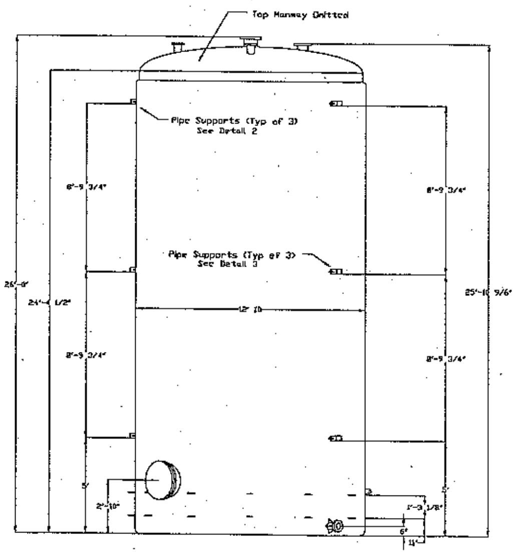
THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



M7	MICHIGAN DISPOSAL WASTE TREATMENT PLANT TANK FARM	PROJ. FILE LIC	FILENAME: PIIM7	REVISIONS: A 4/27/04 Updated; B; C; D; E
	SILO & VERTICAL TANK DETAILS	DATE: 3/4/95 SHEET ___ OF ___	SCALE: As Noted DRN BY: CAQ	

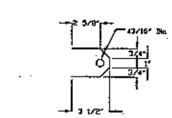
THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI 48184
TEL. (734) 329-8000



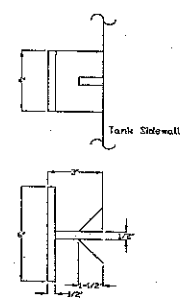


HAZARDOUS WASTE TANKS - #25 & #27

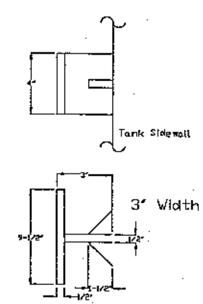
Fitting Schedule					
Item	Qty	Size	Rating	Description/Service	Material
10	1	8	125	H.L. Flange - Level Transmitter	FRP
20	1	3	125	H.L. Flange - Spare	FRP
30	1	3	125	H.L. Flange - Fill	FRP
40	1	3	125	H.L. Flange - High Level Switch	FRP
50	1	6	125	H.L. Flange - Overfill/Vent	FRP
60	1	3	125	H.L. Flange w/Plate Gusset - Drain	FRP
70	1	20	125	Manway Assembly	FRP
80	1	3	125	H.L. Flange w/Plate Gusset - Outlet	FRP
80	1	3	125	H.L. Flange w/Plate Gusset - Outlet	FRP



Hold Down Detail (1)



Pipe Support Detail (2)



3" Width

Pipe Support Detail (3)

SPECIFICATIONS

1) Service: 16.5% Sodium Hypochlorite Solution
2) Temperature: Operating: Ambient Design: 100 F
3) Pressure: Operating: Atmospheric
4) Capacity: 20,943 U.S. Gallons
5) Specific Gravity: Design: 1.2 maximum
6) Tank Weight Empty: 5,800 lbs without fittings or accessories
7) Seismic Zone: 1 Wind Load: 70 mph

LAMINATE CONSTRUCTION

Resin System
Premium Grade Derakane 441-400 Vinyl Ester Resin throughout
Double Nexus Synthetic Veil In Corrosion Barrier
BPO/DMA Catalyst System
U.V. Absorber In Exterior Resin Layer

Dome Top:
0.040 Inch Double Nexus Veil In Inner Layer
0.100 Inch Corrosion Barrier: Chop
0.192 Inch Structural Layer: Chop
0.332 Inch Total

Sidewall Top Section:
0.040 Inch Double Nexus Veil In Inner Layer
0.100 Inch Corrosion Barrier: Chop
0.150 Inch Structural Layer: Helical Winding w/Str. Wind &/or 1 1/2 oz when req'd
0.290 Inch Total

Sidewall Bottom Section:
0.040 Double Nexus Veil In Inner Layer
0.100 Inch Corrosion Barrier: Chop
0.140 Inch Structural Layer: Chop & (1) Ply Uni-Directional - 48" LG.
0.260 Inch Structural Layer (taper to 0.180 inch); Helical Winding w/str. wind &/or 1 1/2 oz when req'd.
0.540 Inch Total (0.810 Inch at bottom knuckle & first 12' of sidewall. Tapers to 0.290 inch at top of straight wall.

Flat Bottom:
0.040 Inch Double Nexus Veil In Inner Layer
0.100 Inch Corrosion Barrier; Chop
0.130 Inch Structural Layer; Chop and Woven Roving
0.270 Inch Total

MICHIGAN DISPOSAL WASTE TREATMENT PLANT MDI TANK FARM	PROJ. FILE: LIC	FILENAME: PHM8	REVISIONS: A 3/24/04 As Built
HAZARDOUS WASTE TANKS - #25 & #27	DATE: 11/24/03	SCALE: 1"=3'-0"	
M8	SHEET ___ OF ___	DRN BY: CAO	

THE ENVIRONMENTAL QUALITY COMPANY
36255 MICHIGAN AVENUE, WAYNE, MI. 48184
TEL. (734) 329-8000

ATTACHMENT 10

TREATMENT METHODS

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MID 000 724 831

7.0 TREATMENT PROCEDURES

MDWTP treats and stores hazardous and non-hazardous liquids and solids. See the WAP, Section 2.3 "Waste Management Units" for additional discussion.

7.1 Waste Treatment Process

MDWTP treats wastes that require treatment to comply with the Land Disposal Restriction (LDR) treatment standards under 40 Code of Federal Regulations (CFR) Part 268 through chemical stabilization using a pozzolanic-type process incorporating cement kiln dust (CKD), lime, and other selective reagents and through chemical oxidation using various oxidants. A treatment train (a stepwise progression of treatments using different reagents) is sometimes required to treat the different constituents of concern. The different treatment steps may include neutralization, deactivation, chemical oxidation, and/or chemical reduction using modifiers and reagents such as lime or oxidizing or reducing agents to destroy or convert selected waste constituents into a physical or chemical form that is less soluble, less hazardous and/or more suitable for subsequent stabilization.

Wastes requiring neutralization, deactivation, chemical oxidation, chemical reduction, and/or stabilization are treated in batch operations. Each batch may contain multiple United States Environmental Protection Agency (USEPA) hazardous waste numbers and treatment standards.

See the WAP, Section 2.3 "Description of Waste Management Units" for additional discussion.

7.2 Chemical Stabilization Reaction

The materials utilized in MDWTP's process follow a reaction sequence very similar to that of the hydration of cement. Upon mixture of the stabilization agents and waste, a hydrated calcium silicate gel is formed. The mix ratio favoring formation of this gel is determined in the laboratory but is adjusted somewhat subjectively during treatment, by observing and modifying the proper waste to stabilization agent mixture as treatment takes place. When a product mix similar to stiff concrete is established, the waste will be allowed to stabilize and then tested prior to landfill disposal. The gel-like mixture hardens as silicate crystals grow in the alkaline matrix of waste and stabilization agents. The silicate crystals grow from individual particles in the matrix, including the waste itself. In the pozzolanic process, the presence of fine grained inert solid particles along with an exceptionally alkaline medium may prevent the formation of a monolithic concrete-like solid, instead forming a material having a soil-like consistency. As with concrete, the reaction continues for several days, gradually strengthening the stabilized product and continually reducing the concentration of leachable metals and other hazardous constituents.

See the WAP, Section 3.7.1 "Chemical Stabilization" for additional discussion.

7.3 Chemical Oxidation Reaction

See the WAP, Section 3.7.2 "Chemical Oxidiation" for a detailed discussion.

7.4 Treatability Testing

See the WAP, Section 3.7.3 "Treatability Studies" for a detailed discussion.

7.5 Mixing, B lending & Commingling of Wastes for Treatment

See the WAP, Section 3.7.4, "Mixing, Blending & Commingling of Wastes for Treatment" for a detailed discussion.

7.6 Authorization to Mix or Blend

See the WAP, Section 3.7.5 "Authorizaiton to Mix or Blend" and Section 3.4.3, "Lab Compatibility" for a detailed discussion.

8.0 TREATMENT METHODS

8.1 Pugmill Treatment

Pugmill mixers are the treatment units used in the MDWTP process for liquids and high water content waste slurries and sludges. Liquid sludges and slurried wastes are pumped from the waste storage tanks to the pugmill. Stabilization agents and oxidants are conveyed from the storage silos and storage tanks, respectively, and fed into the pugmill at the same point as the liquid waste(s). After mixing in the pugmills, the waste is discharged to a stacking conveyor for distribution to the waste holding tanks. Upon completion of treatment of all materials in the treatment tank, the waste is sampled and analyzed to demonstrate and document effective treatment.

The pugmill is used for the treatment of non-hazardous wastes and hazardous waste identified in 40 CFR Part 261, Subparts C and D, those wastes identified in the WAP. Standard treatment involves mixing the waste with the stabilization agent(s) in a ratio determined by the laboratory.

For the West Pugmill (Tank 14), this is accomplished by setting the feed rates on the rotary vane feeders at the base of silos 1, 2, or 3 in proportion to the liquid feed rate on the screw conveyor or pump coming from Tanks 11, 16, 17, 18, or 19. After treatment in the pugmill mixer, treatment residues are discharged using conveyors to Tank A, B, C, D (formerly Tanks 7A, 7B, 8A, or 8B).

For the East Pugmill (Tank 15), this is accomplished by setting the feed rates on the rotary vane feeders at the base of silos 4, 5, or 6 in proportion to the liquid feed rate on the screw conveyor or pugs coming from Tanks 12, 16, 17, 18, 19, 25, or 27. After treatment in the pugmill mixer, wastes are discharged using conveyors to Tanks E, F, G, H (formerly tanks 9A, 9B, 10A, or 10B).

8.2 In-Tank Treatment

For waste streams not treated in a pugmill mixer, due to physical constraints such as particle size, physical state, or available space the material will be treated in the treatment tanks. The process is similar to that described above, except that mechanical mixing of waste and treatment agents is performed in the treatment tank using the bucket of an excavator. The treatment agents may be added to the tank from pugmill mixer or placed directly into the tank. The excavator is used to thoroughly mix the materials into a homogenous mass. Following stabilization, the treated waste solidifies as described above. Also, as described below, the effectiveness of the treatment is confirmed through post treatment analysis of the residue as appropriate.

As with pugmill treatment, Tanks A-H (formerly tanks 7a - 10b) receive non-hazardous wastes and hazardous wastes described in 40 CFR Part 261 Subpart C and D and those wastes identified in the WAP.

9.0 WASTE-SPECIFIC TREATMENT

The waste treatment processes utilized by MDWTP, described in Section 7.1 above and the WAP, Section 2.3, are effective for a broad range of wastes containing inorganic and organic constituents. The treatment operations may combine several wastes or shipments from various generators to facilitate operational efficiency and utilization of available processing capacity. Batch treatment of multiple wastes and/or shipments will be based on chemical compatibility, USEPA hazardous waste numbers, and treatment requirements.

A general treatment process logic for the MDWTP regarding target constituents, typical waste codes, "treatment trains" and post treatment parameters is provided in the WAP. Descriptions of the treatment technologies utilized for various applicable waste types and basic operating parameters and principles are presented in Figures 1 through 4 in the WAP.

9.1 Characteristic Wastes

See the WAP, Section 3.8.4 “Characteristic Wastes & LDRs”.

9.2 Hazardous Debris

See the WAP, Section 3.8.5 "Hazardous Debris & LDRs" for a detailed discussion.

9.3 Description of the Macroencapsulation Unit

See the WAP, Section 3.9.1 "Description of the Macro-encapsulation Unit" for a detailed discussion.

9.4 Description of The Macroencapsulation Process

See the WAP, Section 3.9.2 "Description of the Macro-encapsulation Process" for a detailed discussion.

9.5 Capacity

See the WAP, Section 3.9.3 "Macro-encapsulation Capacity".

10.0 POST TREATMENT ANALYSIS

See the WAP, Sections 3.7.3, 3.8, 3.9 and 4.4.

11.0 TREATMENT RESIDUE DISPOSAL

See the WAP, Sections 3.8 and 3.9.

ATTACHMENT 11

GROUNDWATER MONITORING PROGRAM

MICHIGAN DISPOSAL WASTE TREATMENT PLANT
MID 000 724 831

GROUNDWATER MONITORING

40 CFR 270.14c(5)

AND

MI ACT R611

GROUND WATER MONITORING PROGRAM - ATTACHMENTS

	TABLE OF CONTENTS	Site	Latest Update
A	Well Locations	Site II	Nov-06
B	MDWTP Ground Water Monitoring Well Logs	MDWTP	Nov-06
C	Chain of Custody & Monitoring Well Damage Report	Site II	Nov-06
D	Operating Procedures for the Water Level Indicator	Site II	Oct-00
E	Depth to Well Screen for Each Existing Well	Site II	Nov-03
F	WELL WIZARD - Dedicated Sampling Systems; Installation, Operation & Maintenance User's Guide	Site II	Apr-03
G	Sample Preservation Procedures	Site II	Oct-00
H	Ground Water Parameter List	Site II	12/1/2004 &Table H-1 added 8/2005
I	Analytical Methods & Target Detection Limits	Site II	Aug-05
J	Field Measurement Equipment & Procedures; YSI Equipment Instructions (pH, specific conductivity & temperature)	Site II	Dec-04
K	Current Laboratory's Quality Assurance Manual	Site II	Dec-04
L	Statistical Monitoring Plan for Ground Water Monitoring Data	Site II	Dec-04

GROUNDWATER MONITORING

40 CFR 270.14c(5)

AND

MI ACT R611

Groundwater Sampling and Analysis Plan

Michigan Disposal Waste Treatment Plant (MDWTP)

MID 000 724 831

Revision Dates:

August 1987

11/95 (A - L)

5/99 (B, E, H)

10/00 (C, D, G, I)

11/03 (A & E)

12/04 (H, K, L)

I. INTRODUCTION

40 CFR, Part 264.97 requires the owner or operator of a hazardous waste facility to develop and follow a consistent program of groundwater sampling and analysis procedures. The program must include procedures and techniques for:

1) sample collection;
2) sample preservation and shipment;
3) analytical procedures; and
4) chain of custody control.

This document has been developed to direct the efforts of our groundwater monitoring personnel and thereby meet the requirement of the rule referenced above.

II. GENERAL DESCRIPTION

There are two groundwater monitoring programs system for Michigan Disposal Waste Treatment Plant (MDWTP). One consists of 6 wells, numbered 18, 19R, 21, 23R, 36 and 47 and monitors the uppermost aquifer for potential impacts from the waste treatment facility. The water-bearing surficial sand unit was removed during construction of the treatment plant; therefore the target aquifer is the glacial sand aquifer and wells MW-21, MW-23R, MW-36 and MW-47 are downgradient from the treatment plant. All wells except for 47, which is unique MDWTP, are also monitored under the Wayne Disposal, Inc. (WDI) landfill monitoring program.

The uppermost aquifer groundwater monitoring system for Site II (WDI/MDWTP) consists of 22 wells, numbered 18, 19R, 20 through 25, 26A, 27A, 28 through 30, 31AR, 32, 34R, 35 through 39 AND 40R. Wells numbered 1A through 17, 26, 27, 31 & 41 through 47 also exist at the site but do not form a part of the groundwater monitoring system for WDI. Wells OB-21, OB-23R, OB-24, OB 34R and OB-40R are also monitored under the Toxic Substances Control Act (TSCA) per conditions contained in 40CFR 761.75. Well locations for Site II are shown on Attachment A. Copies of the well logs for all of MDWTP's wells are included in Attachment B.

The second monitoring program is for the upper shallow perched groundwater in the area known as the southeast container storage area (SECSA). In this area, the upper water-bearing sand, although not an aquifer, is still in place and is the first unit that would be impacted by SECSA activities. The groundwater flow direction in this unit is to the east. Monitoring of this unit is limited to quarterly hydraulic monitoring only unless a structure is constructed and used for storing and handling waste, or if it is determined that this shallow groundwater ceases to flow to the east toward the south sedimentation basin. If either of these conditions are met, a water quality monitoring program would be initiated. Proposed well locations for monitoring the SECSA includes wells P-1, P-2R, P-3, P-4R, P-5 & P-6. P-7 would be installed in the event that P-6 is closed. Well locations are shown on the map at the end of the this GWMP. The proposed arrangement will provide coverage in the direction of groundwater flow at approximately 150-foot intervals. Furthermore, both the outlet to the sedimentation basin, which is probably the local discharge feature, and the receiving surface water feature (Quirk Drain) are already monitored as part of other monitoring programs at the site.

III. LABORATORY

Analyses of samples from the wells are conducted by Trimatrix Laboratories, Inc. (TriMatrix). Analytical arrangements and sample bottle preparation can be ordered in advance by calling TriMatrix. Request all analyses when calling for bottles so the laboratory personnel can properly prepare the containers.

If Site II decides to contract analysis of groundwater samples to another laboratory, the change will be made only after at least two concurrent sampling/analysis events show adequate correlation of analysis results of the existing and proposed contract laboratories.

For record keeping, three items are required. First, a notebook is maintained on-site into which all pertinent monitoring well data is entered. These items include, but are not limited to, name of sampler, date, time, sampling point, depth to standing water in the well, calculations for determining the volume of water to be purged from the well prior to sampling, results of any field or lab tests conducted after sampling and any other observations of the sample character or sampling environment. Copies of the field data notes must be included in the report sent to MDEQ. Second, an equipment inventory, repair and calibration log is maintained in the Engineering field office. This log is used to list the inventory (by serial number) of all dedicated pumping apparatus and field measurement devices. Any changes of equipment or repairs to equipment must be noted in this log, as well as daily instrument calibrations, etc. Also required for record keeping are blank copies of the chain of custody record from TriMatrix. A sample copy of this sheet is included herein as Attachment C-1. This sheet must be filled out fully for each sample submitted for analysis.

IV. STANDING WATER LEVELS

The sampling schedule for the uppermost aquifer wells is generally arranged such that the wells are sampled the month immediately following that in which Wells 1A through 17 are sampled. To obtain the best picture of static water levels for the site, 1) the levels must be obtained for <u>all 49 wells</u> before any water is removed for purging or sampling, and 2) the levels must be obtained for all 49 wells in as short a time as possible on the same day, due to barometric pressure effects. This means that static water levels for the wells are generally determined at least 30 days in advance of their sampling. This is the only case where purging and sampling does not immediately follow the water level observations. Water levels from the SECSA should be collected all on the same day but not necessarily the same day as the uppermost aquifer wells.

The depth to standing water within the well casing is measured from the top of casing (TOC). The top of the well casing is exposed by removing the white plastic Well Wizard^{TM} well heads. <u>The surveyed point on the casing is always at the edge on the north side of the casing</u>. Additionally, there is a permanent mark on the north side of the casing which marks the edge from which water levels are to be taken. The TOC elevations shall be surveyed at least once every two years to verify accuracy. Removal of the well head is necessary for determination of the standing water level. The depth to water is measured using a electric water level indicator.

Attachment D describes the operating procedures for the water level indicator, which is used for this purpose.

When using the water level indicator, make certain that the probe and submersed portion of the cable are cleaned with distilled water and a clean rag, followed by a distilled water rinse. This prevents cross contamination between wells. Lower the probe into the casing slowly while watching for the light. Carefully determine the water level by raising and lowering the probe at the water surface, and monitoring the light and buzzer. Record the distance from the point on the cable at TOC to the nearest marking on the cable within the well casing. The markings on the cable are scaled in 0.01 foot intevals. Record the measurement to the nearest 0.01 foot. The depth to standing water is then the distance from the probe tip at the water level to the marking on the cable. Record this depth in the field notebook.

V. WELL PURGING

Before purging a well, it is necessary to determine the quantity of water contained within the well casing. This is done by subtracting the depth to standing water from the depth to the well screen. The depth to standing water must be determined just prior to beginning sample collection. The depth to the well screen for each existing well is listed on Attachment E. The difference between screen depth and water level depth is the height of water standing within the well. Multiply this height of water by 0.17 gallons per foot (for 2 inch diameter well casing). Multiply that product by 3, the number of standing volumes to be purged, which is the minimum recommended by

MDEQ. The resultant product is the total quantity to be purged from the well, in gallons. Once again,

Amt. purged (in gallons) = (Ht. of standing water) x 0.17 x 3

Record these calculations in the field notebook.

The depth to the well screen should be confirmed every four years by removing the dedicated pump assemblies and lowering the water level indicator probe to the very bottom of the well casing for a determination of the clear depth of the well (make sure that the indicator cable is cleaned between each well). In addition, well depths should be checked if a change in well yield or sample appearance (i.e turbidity) is noted. It is very important to ensure that the pump and tubing are kept clean when removed from the well (i.e. do not place equipment on ground, rather, wrap in plastic sheeting).

Wells with dedicated pumps (i.e uppermost aquifer wells) are purged using the dedicated pumps. The SECSA wells may not be able to support a pump and can then be purged and sampled with a disposable bailer. Once 3 standing well volumes have been removed, measure and record the pH and specific conductance of the water coming from the well. Continue to record these values at a rate of once every 10 minutes. After three values of pH and specific conductance have been obtained in this manner, compare the highest and lowest values. If the difference between the highest and lowest pH value is 0.07 su or less, then the well is considered stabilized with respect to pH. If the difference between the highest and lowest specific conductance values is 18 μmhos/cm or less, then well stabilization with respect to this parameter is considered complete. If the difference between the highest and lowest values for either parameter exceeds this criteria, pump the well another 10 minutes and recheck both parameters. Perform the comparison again, using only the last three monitored values of pH and specific conductance. Once the criteria are satisfied for any 3 consecutive monitored values of both pH and specific conductance, then consider the well fully stabilized and proceed with sampling. Measure and record well water temperature at this time as well. Record in the field notebook all the data obtained to establish well stabilization. In the cases where an individual well cannot be purged to stabilization in a manner described above because the well becomes fully dewatered, then sample the well after completely dewatering (evacuating) the well 4 times. For each sampling event, the second, third and fourth well evacuations should be performed within 3 days of the previous well evacuation. Sampling should be accomplished as soon after the fourth well evacuation as possible, depending upon the rate at which the water level in the well recovers. Measure and record pH, specific conductance and temperature in the field at the time the sample is obtained from such a well. Fully record in the field notebook all instances of well evacuation.

At Site II, we employ the "Well Wizard"TM system of dedicated pumps. This means that each well has a submersible pump within it, generally located at the well screen. The control unit and cylinders of compressed nitrogen are the other components that complete this system. Because sampling immediately follows the purging step in nearly all cases, the sampling box is always included during well purging. The sample box is discussed in greater detail in the Sample Collection portion of this document.

Prior to a sampling round for the wells, replace the sampling box discharge tube. To set up the Well Wizard™ system for operation, connect the nitrogen cylinder hose to the supply port on the controller unit. Connect one end of the coiled tubing within the controller unit to the Drive Air Out port on the unit, and the other end to the smaller of the two ports on the well head assembly. Connect the water sample line from the larger of the two well head ports to the back of the sampling box. Make certain that the valve on the rear of the box directs flow out of the box and through the discharge tube, until well purging is completed.

To initiate purging, begin the flow of nitrogen from the cylinder. Measure the quantity of water purged from the well using the graduated 3 gallon bucket kept with this equipment. Note that all purged water should be discharged on the ground away from the well. Do not allow the purged water to re-enter the well or the well protective casing nor should you allow ponding of the water around the well. Further background on Well Wizard™ operation can be gained by referring to Attachment F. Report any problems with equipment function to the Regulatory Affairs Department.

VI. SAMPLE COLLECTION

Upon completion of the well purging step, or return to a well which has been evacuated four times for purging, you are ready to take samples. Make sure each sample bottle for a given monitoring well has a label (affixed by the analytical laboratory personnel) which contains our facility name, the monitoring well number, the date and the sampler's initials. If a preservative has been included by the laboratory, such a note should appear on the label.

In the past sampling programs, it has been shown that airborne artifacts from disposal operations and engine exhaust can affect the number of detected constituents and their concentrations within groundwater samples. For this reason, a controlled-atmosphere sampling box was fabricated. Nitrogen is used as the sampling atmosphere, thereby minimizing the probability of impacts to sample quality by airborne artifacts. All samples taken from Site II wells using dedicated pumps shall be taken within the sampling box.

In preparation for sampling, connect the nitrogen cylinder to the sampling box and purge the box atmosphere with nitrogen for 20 to 30 minutes. Make certain that all sample bottles to be used at a given location are placed within the box with caps off prior to purging the box atmosphere. Further, a new laboratory grade tygon tube connecting the wellhead to the sampling box must be used for the collection of samples from each location. When all is ready, turn the valve on the rear of the sampling box, diverting the flow of water from the discharge tube to the sampling tube within the box.

Samples for volatile organic compounds will be filled first. No headspace is permitted in the small glass vials. This may require several attempts but it can and must be done. Make certain not to touch the inside of bottle necks or caps with your hands. Next, fill the bottles for total organic carbon, total phenolics, metals and then other miscellaneous parameters, in this order. Fill each sample bottle to the very top and allow minimal headspace (air bubbles when capped and tipped) and take care not to spill any of the preservatives. Record the number and type of samples taken and the time of sampling on the chain of custody record and in the field notebook.

Trip blanks shall be used every day and shall remain unopened throughout the sampling day. Field blanks shall also be submitted as well. These are all available from the laboratory and consist of VOC vials. There will be one field blank per well. It will be opened in the nitrogen sampling box and will remain open while that well is being sampled. Both kinds of blanks should be handled and shipped exactly as the well samples are. The blanks shall be preserved in the laboratory exactly as samples for Table 3a. Only a limited number of the blanks will be analyzed on a random basis for Table 3a parameters. However, if a positive result for any Table 3a parameter is noted in a given well, the matching trip and field blanks will immediately be analyzed for the offending parameter(s). A complete replicate sample shall be obtained from one well, chosen randomly, during each sampling round and will be analyzed for the same parameters as the sample it replicates.

VII. SAMPLE PRESERVATION AND SHIPMENT

Attachment G is a tabulation of sample preservation procedures for Trimatrix. The samples must be preserved in accordance with the procedures outlined in this attachment. For all samples except dissolved metals, the laboratory provides clean, pre-preserved bottles (where necessary). Samples to be analyzed for dissolved metals can either be field filtered with a 0.45 μm in-line filter cartridge and preserved with a couple of drops of reagent grade HNO_3 to a pH of less than 2, or the samples can be filtered and preserved immediately upon delivery to the laboratory.

When the sample collection step is completed, open the sampling box, transfer all sample bottles to a cooler and pack the cooler with ice. Samples in the cooler are to be stored in the engineering field office or other secure location until they are transported to the laboratory. The samples must be stored in a secure location at all times and in accordance with chain of custody procedures.

At this point, you are ready to prepare for the next set of samples by replacing the tubing for the sampling box, purging the sampling box with nitrogen and by completing sample bottle labels and chain of custody records.

All collected samples and blanks will be stored in a secure location until transport to the contract laboratory. Be sure to take along all chain of custody records. The handling of these forms is covered in the Chain of Custody Control portion of this document.

VIII. ANALYTICAL PROCEDURES

The parameters to be tested for as part of the monitoring program for the uppermost aquifer wells are shown in Attachment H. In the event the the SECSA program is initiated, the parameters and frequencies be developed and submitted to MDEQ for review. This list will be developed based on the types and quantities of waste likely to be handled and stored in this area.

Specific analytical procedures and target detection limits to be used by TriMatrix for this monitoring program are tabulated in Attachment I. However, as changes to analytical methods or to the detection limits contained within MDEQ WHMD Operational Memo Gen-8 the contents of Attachment I must be updated accordingly. Further, this attachment should be reviewed periodically to determine if the laboratory has made changes that should be reflected in the attachment. QA/QC frequencies, and precision and accuracy calculations are included in Trimatrix's QA/QC manual. Changes made to detection limits, analytical methods or QA/QC in response to regulatory requirements can be utilized in this monitoring program without changing the plan, but must be included in updated sampling and analysis plans.

Field measurements of specific conductance, pH and temperature will be performed using the equipment and procedures described in Attachment J. The instruments must be calibrated prior to each day of use and the appropriate notation made in the Equipment Inventory, Repair and Calibration Log described in Section I.

TriMatrix's Quality Assurance Manual is included as Attachment K. This manual describes the internal policies, guidelines and procedures of TriMatrix. This manual is not intended to describe the specific details of this particular monitoring program. Rather, we are to use this document as a guideline in evaluating TriMtrix's QA/QC and standard operating procedures to ensure that generally acceptable practices are employed.

IX. CHAIN OF CUSTODY CONTROL

Chain of Custody refers to the record of individuals and external conditions of sample handling through the time of laboratory analysis. The chain of custody record included as Attachment C is the principal document of this record. These sheets must be fully filled in with sampling information as well as the persons involved and shipment conditions during transport to the analytical laboratory. These sheets must accompany the samples to the laboratory.

When the samples are surrendered at the laboratory, each chain of custody record must be signed by the person transporting the samples as well as a representative of the receiving laboratory. The lab will make a copy of each sheet for us and keep the originals. Two copies must be made upon return to the site: one for the operating log notebook and one for the Groundwater Monitoring files. Upon completion of a full round of sampling, transmit depth to standing water information, field monitoring data and all chain of custody records to the Regulatory Affairs Department.

X. EQUIPMENT AND WELL MAINTENANCE

Equipment used for the collection and analysis of groundwater samples must be maintained in working order and replaced or repaired promptly when necessary. Electrodes for pH and specific conductance should be replaced annually, or sooner if they become difficult to calibrate or appear to malfunction. The dedicated Well Wizard™ pumps and associated equipment require no routine maintenance but should be promptly replaced or repaired in the event of a malfunction. Any pump removed from a well should be thoroughly cleaned before replacement. Tubing removed from the well should be packaged and stored to prevent contamination or replaced. As outlined in Section I, records of instrument calibration and any equipment replacement or repair must be kept in the Equipment Log maintained at the Engineering field office.

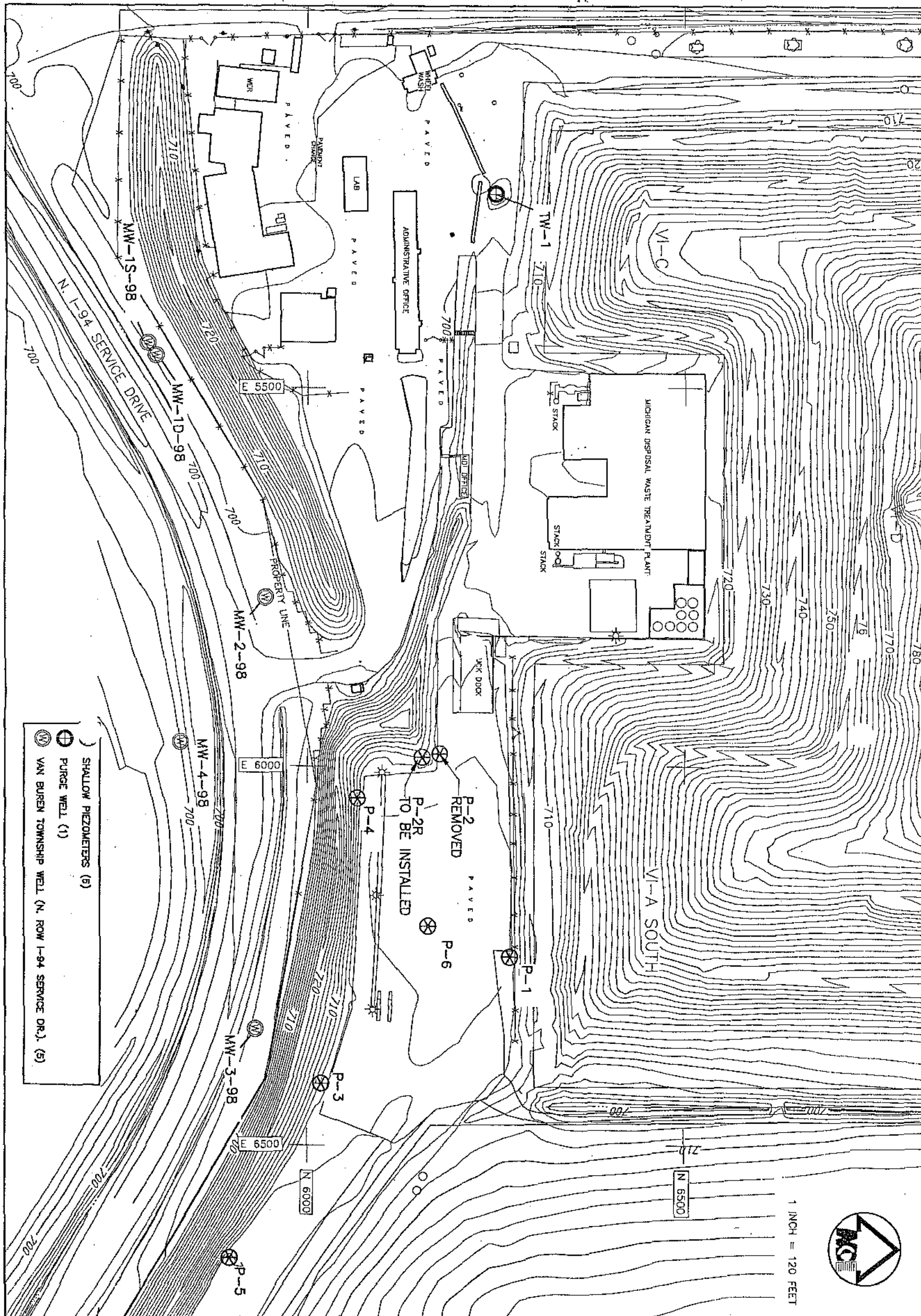
The well casings, protective covers, and Well Wizard^{TM} pump heads should be inspected for damage at the time of each well sampling. Any damage should be noted in the field notebook and a Monitoring Well Inspection/Damage Report must be filled out and sent to the Regulatory Affairs Department. A copy of this form is included as Attachment C-2. Also note any surface erosion, standing water at the well or evidence of a damaged grout seal around the well.

In the event any damage requiring well repair becomes necessary, a Damage Incident Report will be prepared by the Regualtory Affairs Department. A copy of this report will be placed in the site Operating Log and the Groundwater Monitoring Operating Log. A proposed method of well repair will be prepared and submitted to the MDEQ for approval. Repair efforts will be undertaken after approval by the MDEQ is received. The MDEQ shall then be notified at least 24 hours prior to initiating the repair efforts. Following completion of the well repairs, as-built documentation of the repair efforts will be prepared. A copy of this will be placed in the site Operating Log and the Groundwater Monitoring Operating Log. A copy will also be sent to the MDEQ.

XI. Statistical Evaluation and Reporting Requirements

All ground water analyses for the uppermost aquifer wells must be analyzed for evidence of statistically significant increases in concentrations of all primary and secondary monitoring parameters as described in Attachment L. If the SECSA program is initiated then a background for the statistical analyses will be completed by sampling each well monthly for a period of eight months (minimum). At the end of background, the data will be evaluated to determine: 1) whether to use interwell or intrawell statistical procedures, 2) which statistical procedures are applicable for each parameter, and 3) whether any data transformations are necessary in order to apply statistical tests. Although the selection of statistical methods will be based on evaluation of the data, it is anticipated that a combination of control charts for parameters that are not highly censored and non-parametric prediction limits for censored data will be utilized.

The analytical reports, the records of the field procedures and a report of the statistical analyses (narrative and tubular) must be submitted to the MDEQ in Lansing within 60 days after each calendar quarter. This report will also include a summary of the review of QA/QC data, a narrative of the sampling event including dates and sampling personnel, and a description of any unusual events or conditions encountered. This report will also include a groundwater contour map of the SECSA wells and an evaluation of groundwater flow in this shallow sand unit. A copy of the statistical summary must also be sent to the MDEQ Southeast Michigan Regional Office. Copies of the analysis and report must be maintained in designated files at the administration office at the site. In addition, an annual report summarizing the results of groundwater monitoring results and which evaluates groundwater flow directions and rates for both the uppermost aquifer and the upper water-bearing zone must be submitted to MDEQ by March 1 of the following year.



JOB #: **05247**	
DATE: 8-24-06	
SHEET 1 OF 1	
SCALE: 1" = 120'	
CADD: JCD	
S2-SECSA_PZ	

WAYNE DISPOSAL SITE NO. 2

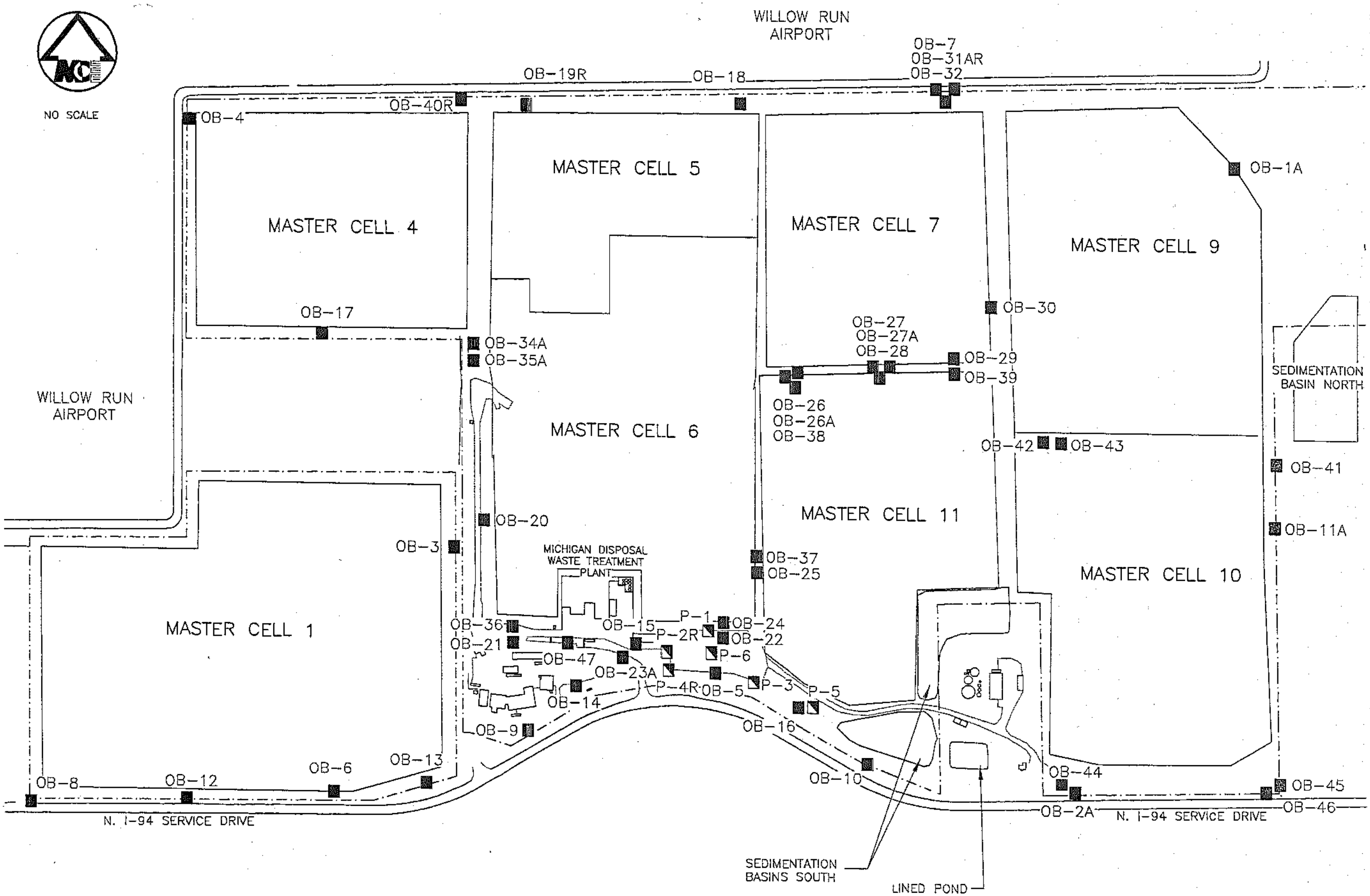
PROPOSED PIEZOMETER LOCATION MAP
SOUTHEAST CONTAINER STORAGE AREA (SECSA)

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax 734.995.0599

Attachment A

Well Locations

(Site II - WDI/MDWTP)



LEGEND

GROUNDWATER OBSERVATION WELL
PIEZOMETER
PROPERTY BOUNDARY

MONITORING WELL LOCATION PLAN
WAYNE DISPOSAL SITE NO. 2

ATTACHMENT A

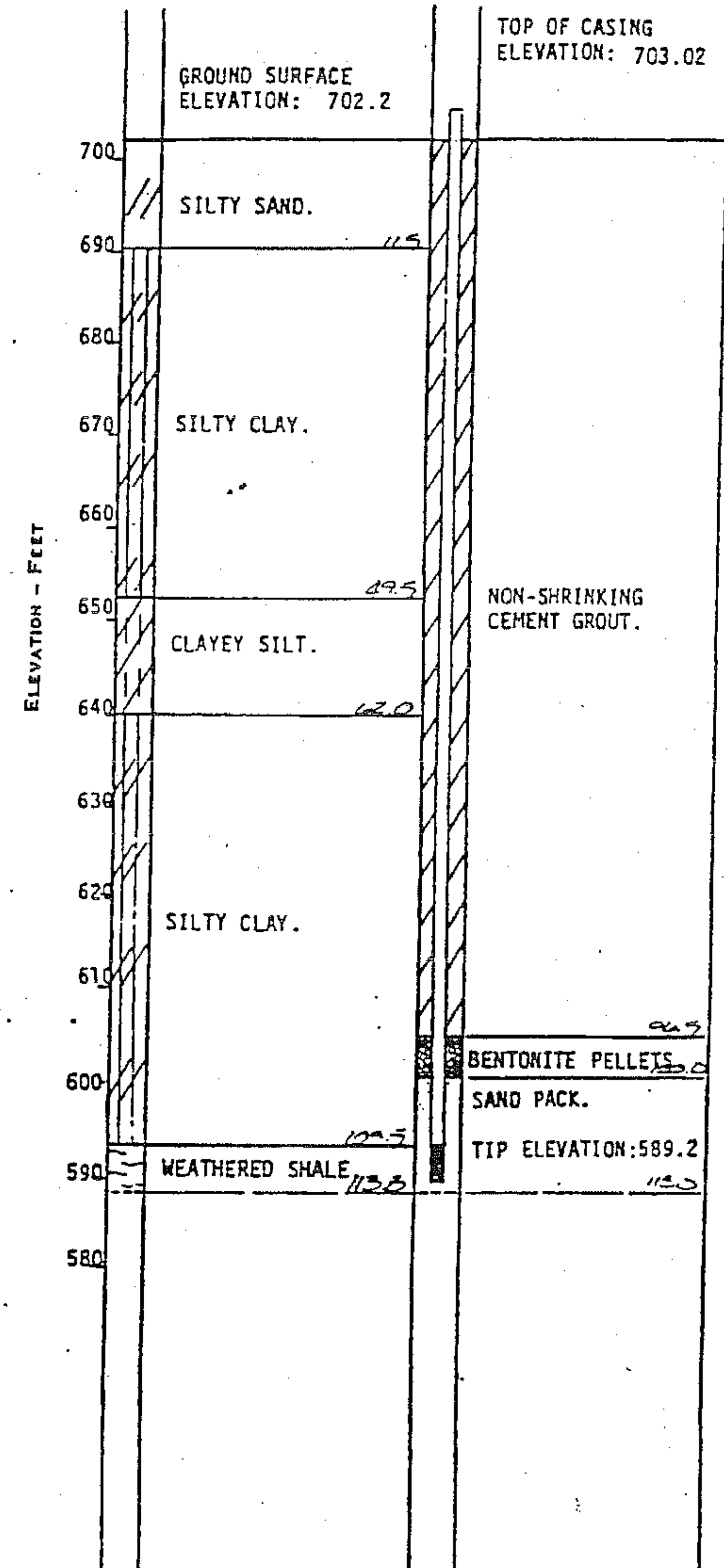
MCLLC 05247-EMS_06

Attachment B

MDWTP Ground Water Monitoring Well Logs

(MDWTP)

LOG OF GROUNDWATER MONITORING WELL	
CLASSIFICATIONS BY: NEYER, TISEO & HINDO, LTD.	
GENERALIZED SUBSURFACE PROFILE	WELL SCHEMATIC



GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-24-84	654.69	
10-22-84	653.22	

CASING - DIAMETER: 2.0"
- LENGTH: 108.0'
- MATERIAL: PVC

SCREEN - DIAMETER: 2.0"
- LENGTH: 5.0"
- MESH: .006" slot
- MATERIAL: PVC

WELL STARTED: 9-11-84
WELL COMPLETED: 9-11-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strata see Log of Test Boring No. OB-18.
2. Top of casing elevations and ground surface elevations provided by Wayne Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL No. OB-18

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE		WELL SCHEMATIC	
GROUND SURFACE ELEVATION: 706.1		TOP OF CASING ELEVATION: 707.82	
SILTY MEDIUM SAND.	7.5		
SILTY SAND.	14.0		
SILTY CLAY.	52.0	NON-SHRINKING CEMENT GROUT.	100.5
SILTY CLAY.	67.0	BENTONITE PELLETS.	101.5
CLAYEY SILT.	82.0	SAND PACK.	
SILTY CLAY.	92.5	TIP ELEVATION: 587.5	119.0
SILT.	97.0		
SANDY CLAY.	100.0		
SILT.	106.0		
WEATHERED SHALE.	119.0		

ELEVATION - FEET: 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	654.10	
9-24-84	654.50	
10-22-84	654.39	

CASING - DIAMETER: 2.0"
- LENGTH: 115.0'
- MATERIAL: Galvanized

SCREEN - DIAMETER: 2.0"
- LENGTH: 3.0'
- MESH: .007" slot
- MATERIAL: Stainless Stee

WELL STARTED: 9-5-84
WELL COMPLETED: 9-5-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface stra see Log of Test Boring No. 08-19.
2. Top of casing elevations and groun surface elevations provided by Way Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL NO. 08-19

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP
WAYNE COUNTY, MICHIGAN

APPROVED BY: MRS DATE: [illegible]

LOG OF GROUNDWATER MONITORING WELL

CLASSIFICATIONS BY:
NEYER, TISEO & HINDO, LTD.

GENERALIZED SUBSURFACE PROFILE	WELL SCHEMATIC
GROUND SURFACE ELEVATION: 699.9	TOP OF CASING ELEVATION: 704.80
SILTY SAND. 2.0	
SILTY SAND. 12.0	
SILTY CLAY. 31.0	
SILTY CLAY. 45.5	NON-SHRINKING CEMENT GROUT.
SANDY SILT. 50.0	
SILTY CLAY. 67.0	
CLAYEY SILT 73.5	
SANDY CLAY. 82.0	
SILTY CLAY. 94.5	89.3 BENTONITE PELLETS 91.0
SILTY SAND. 98.5	SAND PACK.
GRAVELLY SAND. 100.0	TIP ELEVATION: 600.9 100.0

ELEVATION – FEET: 690, 680, 670, 660, 650, 640, 630, 620, 610, 600

GROUNDWATER DATA

DATE	GROUND-WATER ELEV. (FEET)	COMMENTS
9-12-84	652.64	
9-24-84	652.64	
10-22-84	652.44	

CASING – DIAMETER: 2.0"
– LENGTH: 94.0'
– MATERIAL: PVC

SCREEN – DIAMETER: 2.0"
– LENGTH: 5.0'
– MESH: .006" slot
– MATERIAL: PVC

WELL STARTED: 7-23-84
WELL COMPLETED: 7-24-84
INSPECTOR: J. Serwik
DRILLER: J. Blank
CONTRACTOR: American Drilling
EQUIPMENT: CME-75

NOTES:
1. For details of the subsurface strat see Log of Test Boring No. OB-21.
2. Top casing elevations and ground surface elevations provided by Wayn Disposal, Inc.

NEYER, TISEO & HINDO, LTD.
CONSULTING ENGINEERS

GROUNDWATER MONITORING WELL NO. OB-21

WAYNE DISPOSAL LANDFILL SITE NO. 2
VAN BUREN TOWNSHIP
WAYNE COUNTY, MICHIGAN

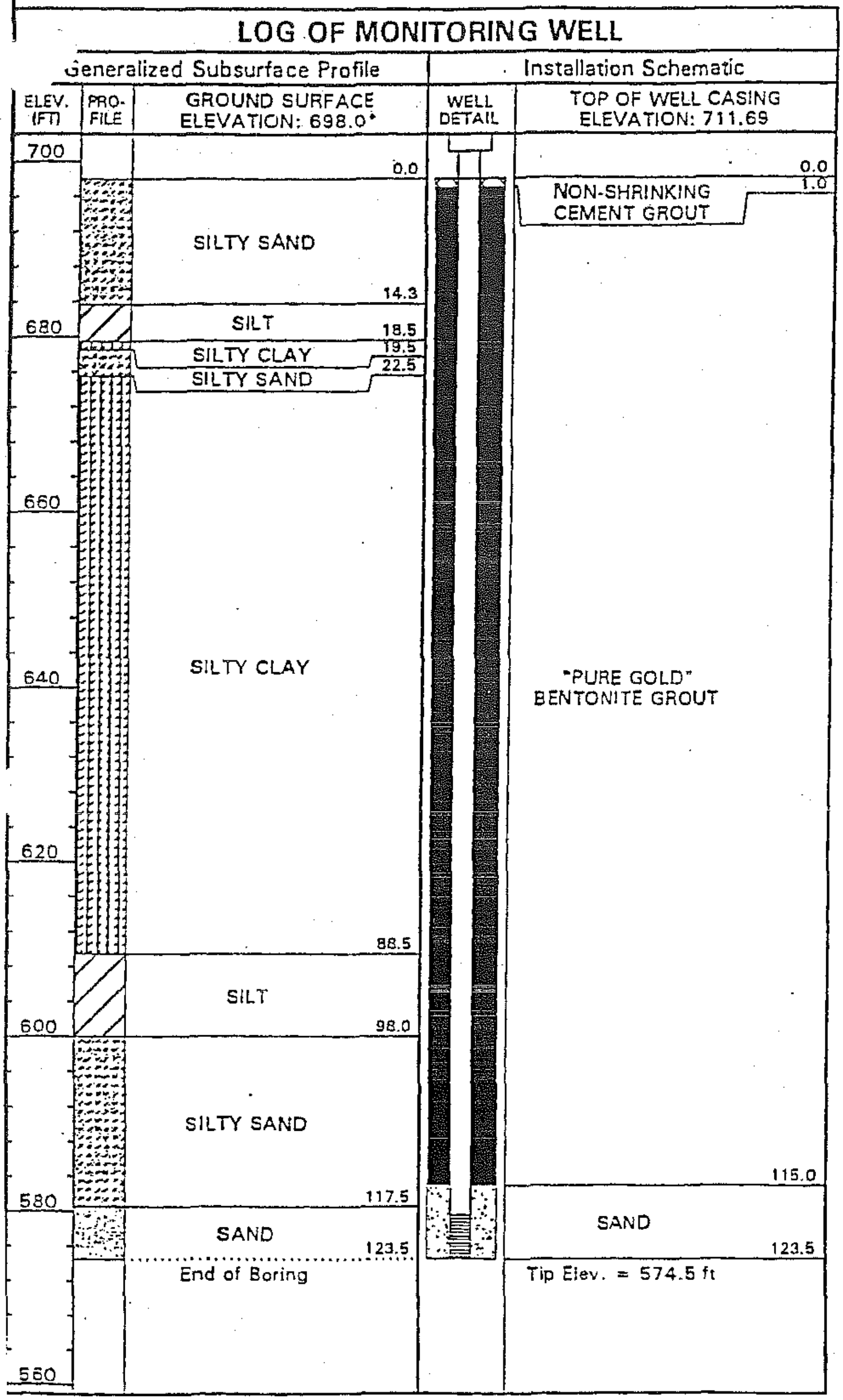
Project Name: *WAYNE DISPOSAL, INC. - SITE #2*

Project Location: *VAN BUREN TWP., WAYNE CO., MICHIGAN*

NTH Proj. No: *13-3051-02*

Checked By: ACE

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] For Details of subsurface strata, see Log of Test Boring No. 08-23R.

[2] Well developed on 10/30/96, removed 595 gallons.

[3] pH @ 7.59, specific conductance @ 676.

[4] Location @ 6208.2 N, 5790.6 E

[5] Location coordinates and top of casing elevation provided by EQ. *Ground surface elevation estimated by NTH at time of drilling. Location was subsequently filled (berm construction).

Started:	*10/28/96*	Casing Diameter:	*2.0"*
Completed:	*10/29/96*	Casing Length:	*130.0'*
Inspector:	*M. Dueweke*	Casing Type:	*Stainless Steel*
Contractor:	*Geo-Tek, Inc.*	Screen Diameter:	*2.0"*
[illegible]	*G. Qualls*	Screen Length:	*5.0'*
Equipment:	*CME-850*	Screen Mesh:	*0.010"*
Well Type:	*Monitoring*	Screen Type:	*Stainless Steel*

FIGURE NO. 2

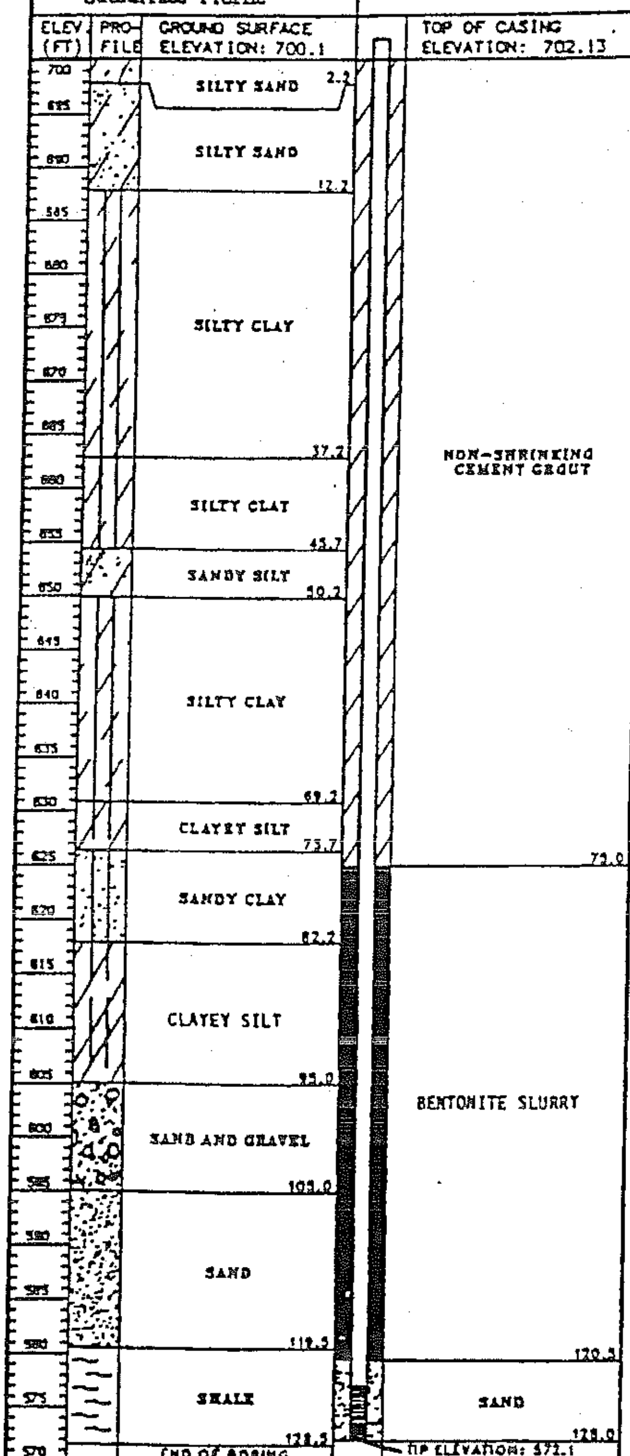
NEYER, TISEO & HINDO, LTD.

MONITOR WELL NO. 08-36

Project Name: WAYNE DISPOSAL LANDFILL – SITE NO. 2
Project Location: VAN BUREN TWP., WAYNE COUNTY, MICHIGAN

NTH Pro. No. 94315 OW
Chk. By: RLB

LOG OF MONITOR INSTALLATION



GROUNDWATER DATA

Date	Ground-water Elev. (ft)	Comments
10/22/87	649.70	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATA, SEE LOG OF TEST BORING NO. 08-36

[2] TOP OF CASING AND GROUND SURFACE ELEVATIONS PROVIDED BY WAYNE DISPOSAL, INC.

Started: 10/1/87
Completed: 10/1/87
Inspector: M. TAKACS / R. BURNS
Driller: S. REMPALSKI
Contractor: MATECO DRILLING COMPANY
Equipment: CME-550
Observation Type: MONITORING WELL

Casing Diam.: 2"
Casing Length: 125'
Casing Type: 70' GALV. / 55' SS
Screen Diam.: 2"
Screen Length: 5'
Screen Mesh: 0.007"
Screen Type: STAINLESS STEEL

Figure No. 15

NTH Consultants, Ltd.

MONITORING WELL NO. OB-47

Project Name : MICHIGAN DISPOSAL, INCORPORATED — NTH Proj. No: 90323 OW

Project Location : VAN BUREN TWP, WAYNE COUNTY, MICHIGAN — Check By :

LOG OF MONITORING WELL

Generalized Subsurface Profile / **Installation Schematic**

ELEV. (FT)	PROFILE	GROUND SURFACE ELEVATION: 699.9	Depth
695		FILL: SAND	4.2
690, 685		SAND	15.5
680, 675, 670, 665, 660		SILTY CLAY	40.5
655, 650, 645		SILTY CLAY	55.8
640, 635, 630, 625, 620		SILTY CLAY	78.8
		CLAYEY SILT	80.0

CONTINUED ON THE NEXT SHEET

TOP OF WELL CASING ELEVATION: 702.57

Installation	Depth
CEMENT GROUT	73.0
BENTONITE SLURRY	80.0

CONTINUED ON THE NEXT SHEET

GROUNDWATER DATA

Date	Ground-water Elev.(ft)	Comments
07/12/90	652.96	
07/16/90	652.95	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATIGRAPHY, SEE LOG OF TEST BORING OB-47.

[2] WELL DEVELOPED WITH COMPRESSED AIR ON 07/16/90.

[3] TOP OF CASING AND GROUND SURFACE ELEVATIONS DETERMINED BY WDI PERSONNEL.

[4] DEPTH TO FIRST COUPLING IS 0.3 FEET BELOW GROUND SURFACE; SECOND COUPLING IS 10.3 FEET BELOW GROUND SURFACE.

Started:	07/02/90	Casing Diameter:	2" I.D.
Completed:	07/12/90	Casing Length:	103 FT
Inspector:	G. CROCKFORD	Casing Type:	60' STAINLESS/43' GALVANIZED
Driller:	M. PUFFPAFF	Screen Diameter:	2"
Contractor:	ENVIRDNMENTAL DRILLING & SERVICES, INC.	Screen Length:	5'
Equipment:	FAILING F-7	Screen Mesh:	.007
Well Type:	MONITORING WELL	Screen Type:	STAINLESS STEEL

Figure No. 2

NTH Consultants, Ltd.

MONITORING WELL NO. OB-47

Project Name : MICHIGAN DISPOSAL, INCORPORATED — NTH Proj. No: 90323 OW

Project Location : VAN BUREN TWP, WAYNE COUNTY, MICHIGAN — Check By :

LOG OF MONITORING WELL

Generalized Subsurface Profile — GROUND SURFACE ELEVATION: 699.9

Installation Schematic — TOP OF WELL CASING ELEVATION: 702.57

ELEV. (FT): 615, 610, 605, 600, 595, 590, 585, 580, 575, 570, 565, 560, 555, 550, 545, 540

Subsurface Profile	Depth (ft)	Installation Schematic	Depth (ft)
CLAYEY SILT	84.2	BENTONITE SLURRY	89.7
SILTY FINE SAND	105.5	SILICA SAND	106.8
SAND	115.0	CAVED MATERIAL	130.2
SAND AND GRAVEL	122.2		
BROKEN SHALE	130.2		
END OF BORING		TIP ELEVATION: 594.3	

GROUNDWATER DATA

Date	Ground-water Elev.(ft)	Comments
07/12/90	652.96	
07/16/90	652.95	

NOTES :

[1] FOR DETAILS OF SUBSURFACE STRATIGRAPHY, SEE LOG OF TEST BORING OB-47.

[2] WELL DEVELOPED WITH COMPRESSED AIR ON 07/16/90.

[3] TOP OF CASING AND GROUND SURFACE ELEVATIONS DETERMINED BY WDI PERSONNEL.

[4] DEPTH TO FIRST COUPLING IS 0.3 FEET BELOW GROUND SURFACE; SECOND COUPLING IS 10.3 FEET BELOW GROUND SURFACE.

Started: 07/02/90
Completed: 07/12/90
Inspector: G. CROCKFORD
Driller: M. PUFFPAFF
Contractor: ENVIRONMENTAL DRILLING & SERVICES, INC.
Equipment: FAILING F-7
Well Type: MONITORING WELL

Casing Diameter: 2" I.D.
Casing Length: 103 FT
Casing Type: 60' STAINLESS/43' GALVANIZED
Screen Diameter: 2"
Screen Length: 5'
Screen Mesh: .007
Screen Type: STAINLESS STEEL

Figure No. 2

LOG OF TEST BORING NO: P-1

NTH CONSULTANTS, LTD.

Project Name: *EQ Site #2 - Southeast Container Storage Area*

Project Location: *Belleville, Michigan*

NTH Proj. No: *13-990953-00*

Checked By: [illegible]

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 701.0

ELEV. (FT)	DESCRIPTION	DEPTH TO BOTTOM OF LAYER (FT.)
701.0–695.1	FILL: Gray SILTY CLAY with Some Sand & Trace of Gravel	5.9
	Gray SAND	6.0
	Gray SILTY CLAY with Some Sand & Trace of Gravel	8.9
	Gray SAND	9.0
	Gray SILTY CLAY with Some Sand & Trace of Gravel	11.0
	Gray SAND with Some Silt & Trace of Gravel	15.0
	Gray SILTY FINE SAND	16.0
	Gray SILTY CLAY with Trace of Fine Sand	18.0
	End of Boring	

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	-- -- --	--				<1
S-2	-- -- --	--				--
S-3	-- -- --	--				--
S-4	-- -- --	--				<1
S-5	-- -- --	--				<1
S-6	-- -- --	--				<1

Total Depth: *18 FT*
Drilling Date: *12/06/99*
Inspector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
~: *J. Ward*

Water Level Observation:
Groundwater encountered at 11.0 ft bgs.

Notes:

Drilling Method:
Drill rig with 4-1/4" inside-diameter, hollow-stem augers and EnviroCore sampler to end of boring.

Plugging Procedure:
Monitoring well P-1 installed in borehole with screen tip set at 16.0 ft bgs.

FIGURE NO. 1

MONITORING WELL NO: P-1

NTH CONSULTANTS, LTD.

Project Name: *EQ-Site #2 - Southeast Container Storage Area*

NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: DLH

LOG OF MONITORING WELL

Generalized Subsurface Profile — GROUND SURFACE ELEVATION: 701.0	Depth	Installation Schematic — TOP OF WELL CASING ELEVATION: 703.50	Depth
	0.0		1.0
Fill: Silty Clay	5.9	Quick Grout	6.5
Sand	6.0		
Silty Clay	8.9	Bentonite Hole Plug	6.5
Sand	9.0		
Silty Clay	11.0		
Sand	15.0	Silica Sand	18.0
Silty Fine Sand	16.0		
Silty Clay	18.0		
End of Boring		Tip Elev: 685.0'	

ELEV. (FT): 700, 695, 690, 685, 680, 675, 670

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/06/99	688.49	(depth at 15.01 ft)

NOTES

[1] For details of subsurface strata, see Log of Test Boring No. P-1.

Started:	*12/06/99*	Casing Diameter:	*2.0 inches*
Completed:	*12/06/99*	Casing Length:	*13.5 feet*
Inspector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:		Screen Mesh:	*0.007 inch*
Well Type:	*monitoring*	Screen Type:	*PVC*

FIGURE NO. 7

LOG OF TEST BORING NO: P-2

NTH CONSULTANTS, LTD.

Project Name: *EQ Site #2 - Southeast Container Storage Area*

NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: DLH

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 703.6

Depth (ft)	Description
0.5	TOPSOIL
1.5	Gray SILTY CLAY with Some Sand & Trace of Gravel
16.5	Brown FINE TO MEDIUM SAND with Little Silt & Trace of Clay
21.0	Gray SILTY CLAY with Little Sand
	End of Boring

SOIL SAMPLE DATA

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	-- -- --	--				<1
S-2	-- -- --	--				<1
S-3	-- -- --	--				<1
S-4	-- -- --	--				<1
S-5	-- -- --	--				<1
S-6	-- -- --	--				<1
S-7	-- -- --	--				<1

Total Depth: *21 FT*
Drilling Date: *12/07/99*
Inspector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
r: *J. Ward*

Water Level Observation:
Groundwater encountered at 17.0 ft bgs.

Notes:

Drilling Method:
Drill rig with 4-1/4" inside-diameter, hollow-stem augers and EnviroCore sampler to end of boring.

Plugging Procedure:
Monitoring well P-2 installed in borehole with screen tip set at 17.0 ft bgs.

FIGURE NO. 2

MONITORING WELL NO: P-2

NTH CONSULTANTS, LTD.

Project Name: *EQ-Site #2 - Southeast Container Storage Area*

NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: DLH

LOG OF MONITORING WELL

Generalized Subsurface Profile			Installation Schematic	
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 703.6	WELL DETAIL	TOP OF WELL CASING ELEVATION: 707.16
705				
		0.0		0.0
		Topsoil 0.5		
		Silty Clay 1.5		
700				Quick Grout
				8.0
695		Fine to Medium Sand		Bentonite Hole Plug 10.0
690				Silica Sand
		16.5		
685		Silty Clay		
		21.0		21.0
		End of Boring		Tip Elev: 687.1'
680				
675				

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/07/99	689.11	(depth @ 18.05 ft)

NOTES

(1) For details of subsurface strata, see Log of Test Boring No. P-2.

Started:	*12/07/99*	Casing Diameter:	*2.0 inches*
mpleted:	*12/07/99*	Casing Length:	*15.06 feet*
pector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:		Screen Mesh:	*0.007 inch*
Well Type:	*monitoring*	Screen Type:	*PVC*

FIGURE NO. 8

LOG OF TEST BORING NO: P2-R

NTH CONSULTANTS, LTD.

Project Name: *EQ SITE #2 - SOUTHEAST CONTAINER STORAGE AREA*

Project Location: *BELLEVILLE, MICHIGAN*

NTH Proj. No: *13-041308-11*

Checked By: KAO

SUBSURFACE PROFILE

GROUND SURFACE ELEVATION: 704.1

ELEV. (ft)	PRO-FILE	DESCRIPTION	DEPTH (ft)
		TOPSOIL: Black SILTY SAND	0.5
		FILL: LIMESTONE AGGREGATE BASE	3.0
700, 695, 690, 685		Brown FINE TO MEDIUM SAND	18.8
		End of Boring	

Elevation scale: 700, 695, 690, 685, 680, 675, 670

Depth scale: 5, 10, 15, 20, 25, 30, 35

SOIL SAMPLE DATA

SAMP. TYPE/ ND.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)

Total Depth: *18.75 FT*
Drilling Date: *09-28-06*
Inspector: *K. Warning*
Contractor: *Mateco Drilling Co.*
Driller: *B. Dreyer*

Drilling Method:
CME-95 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Monitoring well P2-R set in borehole with screen tip set at 18.75 ft bgs.

Water Level Observation:
Groundwater encountered at 16.0 ft bgs during drilling.

Notes:

Location Coordinates:
E *5999.8* N *6155.4*

FIGURE NO.

MONITORING WELL NO: P2-R

NTH CONSULTANTS, LTD.

Project Name: *EQ SITE #2 - SOUTHEAST CONTAINER STORAGE AREA*

Project Location: *BELLEVILLE, MICHIGAN*

NTH Proj. No: *13-041308-11*

Checked By: KRG

LOG OF MONITORING WELL

Generalized Subsurface Profile

GROUND SURFACE ELEVATION: 704.1

ELEV. (ft)	Depth (top)	Description	Depth (bottom)
705	0.0	Topsoil: Silty Sand	0.5
	0.5	Fill: Limestone Aggregate Base	3.0
700, 695, 690	3.0	Sand	18.8
685	18.8	End of Boring	

Elevation scale: 705, 700, 695, 690, 685, 680, 675

Installation Schematic

TOP OF WELL CASING ELEVATION: 707.0

Depth (top)	Description	Depth (bottom)
0.0	Non-Shrinking Cement Grout	8.2
8.2	Hydrated Bentonite Pellets	10.2
10.2	Filter Sand	18.8

Tip Elev: 685.35
Tip Depth: 18.75

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] For details of subsurface strata, see Log of Test Boring P2-R.

[2] Top of casing & ground surface elevations based on EQ Survey.

[3] Coordinates: E 5999.8, N 6155.4

Started:	*09-28-06*
Completed:	*09-28-06*
Inspector:	*K. Warning*
Contractor:	*Mateco Drilling Co.*
Driller:	*B. Dreyer*
Equipment:	*CME-95 Drill Rig*
Well Type:	*Monitoring*

Casing Diameter:	*2.0 in*
Casing Length:	*16.65 ft*
Casing Type:	*PVC*
Screen Diameter:	*2.0 in*
Screen Length:	*5.0 ft*
Screen Mesh:	*0.010 in*
Screen Type:	*PVC*

FIGURE NO.

LOG OF TEST BORING NO: P-3

NTH CONSULTANTS, LTD.

Project Name: *EQ Site #2 - Southeast Container Storage Area*

NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: DLH

SUBSURFACE PROFILE / SOIL SAMPLE DATA

GROUND SURFACE ELEVATION: 704.2

ELEV. (FT)	DESCRIPTION	DEPTH TO BOTTOM OF LAYER (FT.)
	Gray SILTY CLAY with Some Sand & Trace of Gravel	8.0
	Brown SILTY FINE SAND	14.5
	Brown SAND with Some Silt & Trace of Gravel	17.5
	Gray SILT & FINE SAND	18.0
	Gray SILTY CLAY with Little Sand	21.0
	End of Boring	

Elevation scale: 700, 695, 690, (, 680, 675, 670. Depth scale (FT.): 5, 10, 15, 20, 25, 30, 35.

SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
S-1	-- -- --	--				< 1
S-2	-- -- --	--				< 1
S-3	-- -- --	--				< 1
S-4	-- -- --	--				< 1
S-5	-- -- --	--				< 1
S-6	-- -- --	--				< 1
S-7	-- -- --	--				< 1

Total Depth: *21 FT*
Drilling Date: *12/07/99*
Inspector: *D. Hohner*
C-- tractor: *Alliance Environmental, Inc.*
J. Ward

Water Level Observation:
Groundwater encountered at 14.5 ft bgs.

Notes:

Drilling Method:
Drill rig with 4-1/4" inside-diameter, hollow-stem augers and EnviroCore sampler to end of boring.

Plugging Procedure:
Monitoring well P-3 installed in borehole with screen tip set at 17.5 ft bgs.

FIGURE NO. 3

MONITORING WELL NO: P-3

NTH CONSULTANTS, LTD.

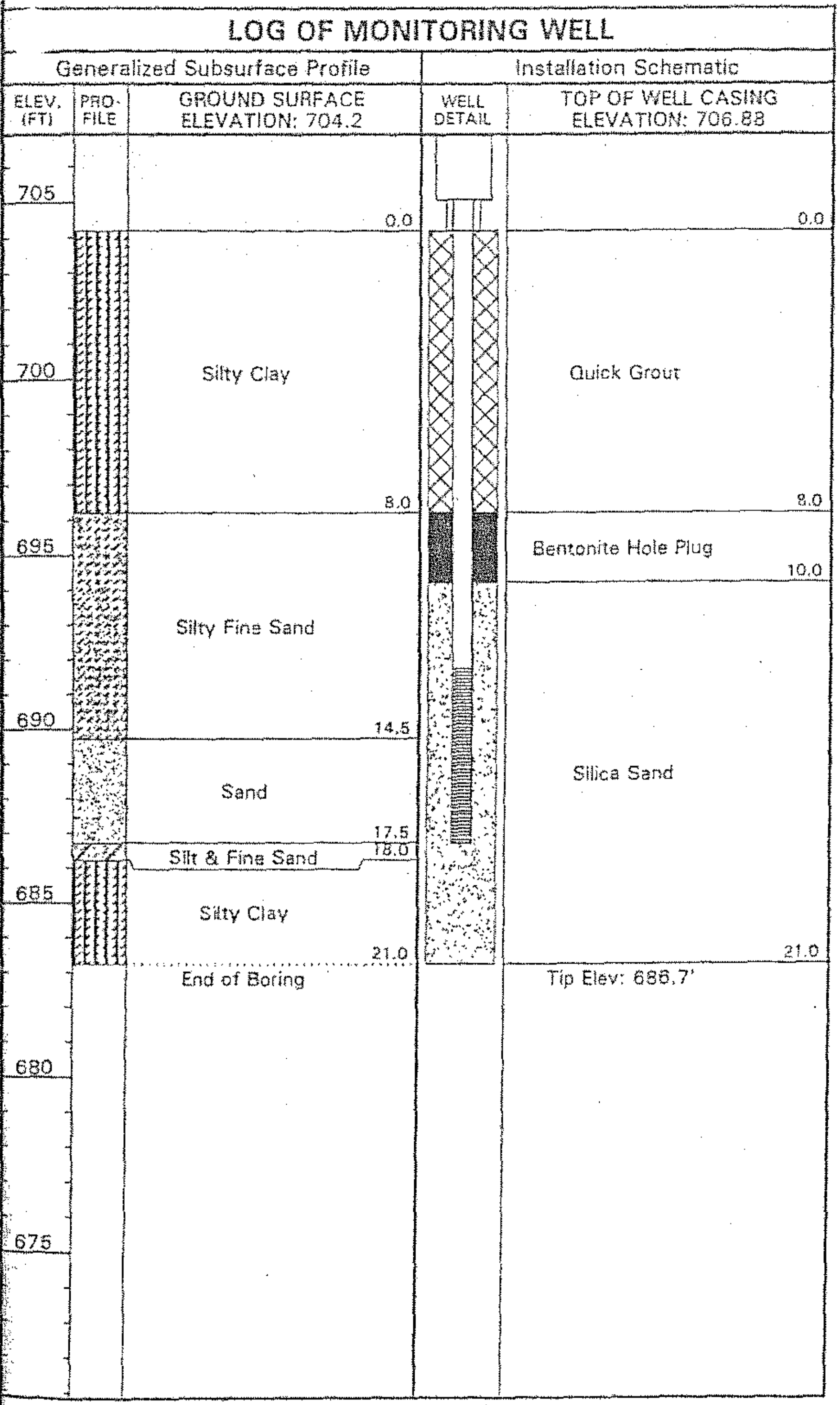
Project Name: *EQ-Site #2 - Southeast Container Storage Area*

NTH Proj. No: *13-990953-00*

Project Locatio n: *Belleville, Michigan*

Checked By:

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/07/99	688.31	(depth @ 18.57 ft)

NOTES

(1) For details of subsurface strata, see Log of Test Boring No. P-3.

Started:	*12/07/99*	Casing Diameter:	*2.0 inches*
Completed:	*12/07/99*	Casing Length:	*15.68 feet*
Inspector:	*D. Hohner*	Casing Type:	*PVC*
tractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
er:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:		Screen Mesh:	*0.007 inch*
Well Type:	*monitoring*	Screen Type:	*PVC*

FIGURE NO. 9

LOG OF TEST BORING NO: P-4

NTH CONSULTANTS, LTD.

Project Name: *EQ Site #2 - Southeast Container Storage Area*

Project Location: *Belleville, Michigan*

NTH Proj. No: *13-990953-00*

Checked By: [illegible]

SUBSURFACE PROFILE / SOIL SAMPLE DATA

GROUND SURFACE ELEVATION: 703.8

ELEV. (FT)	DESCRIPTION	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCDNF. COMP.ST. (psf)	HNu READING (ppm)
	Brown SAND with Little Silt, Trace of Gravel & Organic Matter	1.0							
	Gray SILTY CLAY with Some Sand & Trace of Gravel	3.0	S-1	-- -- --	--				<1
700	Brown SAND	3.5							
	Gray SILTY CLAY with Some Sand & Trace of Gravel	8.5	S-2	-- -- --	--				<1
695			S-3	-- -- --	--				<1
	Brown SILTY FINE SAND	13.5	S-4	-- -- --	--				<1
690	Gray SILTY FINE SAND	17.0	S-5	-- -- --	--				<1
	Gray SILT	17.1							
	Gray SILTY CLAY with Little Sand & Trace of Gravel	18.0	S-6	-- -- --	--				<1
	End of Boring								

Elevation scale: 700, 695, 690, 680, 675, 670. Depth scale: 5, 10, 15, 20, 25, 30, 35.

Total Depth: *18 FT*
Drilling Date: *12/06/99*
Inspector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
: *J. Ward*

Water Level Observation:
Groundwater encountered at 13.5 ft bgs.

Notes:

Drilling Method:
Drill rig with 4-1/4" inside-diameter, hollow-stem augers and EnviroCore sampler to end of boring.

Plugging Procedure:
Monitoring well P-4 installed in borehole with screen tip set at 17.0 ft bgs.

FIGURE NO. 4

MONITORING WELL NO: P-4

NTH CONSULTANTS, LTD.

Project Name: *EQ-Site #2 - Southeast Container Sto:age Area*

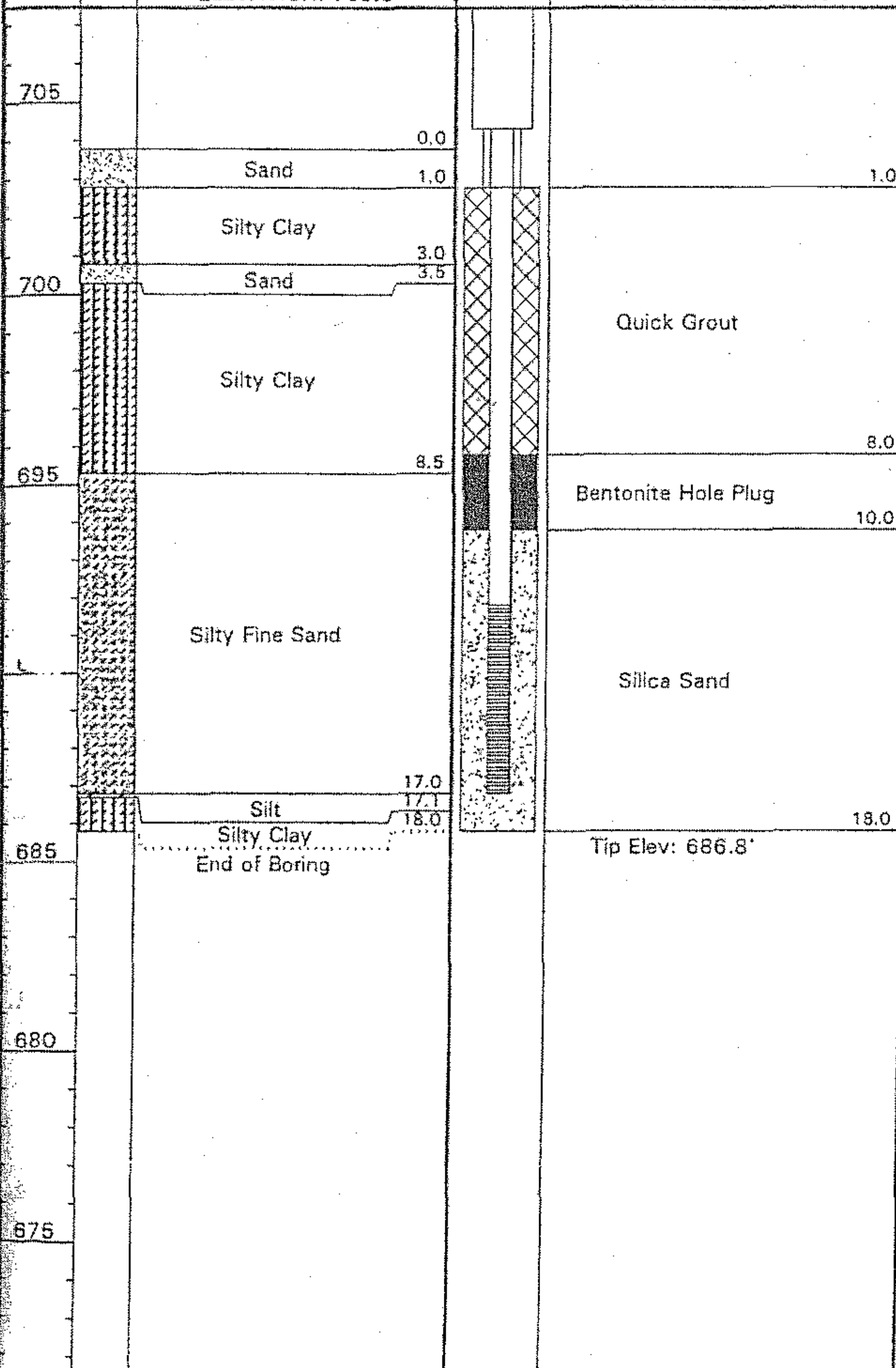
NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: [illegible]

LOG OF MONITORING WELL

Generalized Subsurface Profile			Installation Schematic	
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 703.8	WELL DETAIL	TOP OF WELL CASING ELEVATION: 707.43



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/06/99	690.32	(depth @ 17.11 ft)

NOTES

[1] For details of subsurface strata, see Log of Test Boring No. P-4.

Started:	*12/06/99*	Casing Diameter:	*2.0 inches*
[Com]pleted:	*12/06/99*	Casing Length:	*15.63 feet*
[In]spector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:		Screen Mesh:	*0.007 inch*
Well Type:	*monitoring*	Screen Type:	*PVC*

FIGURE NO. 10

LOG OF TEST BORING NO: P4-R

NTH CONSULTANTS, LTD.

Project Name: *EQ SITE #2 - SOUTHEAST CONTAINER STORAGE AREA*

Project Location: *BELLEVILLE, MICHIGAN*

NTH Proj. No: *13-041308-11*

Checked By: KRO

SUBSURFACE PROFILE / SOIL SAMPLE DATA

ELEV. (ft)	GROUND SURFACE ELEVATION: 703.7	DEPTH (ft)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CDNT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
	FILL: SANDY TOPSOIL — 0.4								
700									
	Gray SILTY CLAY with Trace of Sand & Gravel	5							
695									
	— 10.0	10							
690									
	Brown SILTY SAND	15							
685	— 18.8								
	End of Boring	20							
680									
		25							
675									
		30							
670									
		35							

Total Depth: *18.77 FT*
Drilling Date: *09-28-06*
Inspector: *K. Warning*
Contractor: *Mateco Drilling Co.*
Driller: *B. Dreyer*

Drilling Method:
CME-95 drill rig with 4-1/4" inside-diameter, hollow-stem augers to end of boring.

Plugging Procedure:
Monitoring well P4-R set in borehole with screen tip set at 18.77 ft bgs.

Water Level Observation:
Groundwater encountered at 18.0 ft bgs during drilling.

Notes:

Location Coordinates:
E *6003.1* N *6072.9*

FIGURE NO.

MONITORING WELL NO: P4-R

NTH CONSULTANTS, LTD.

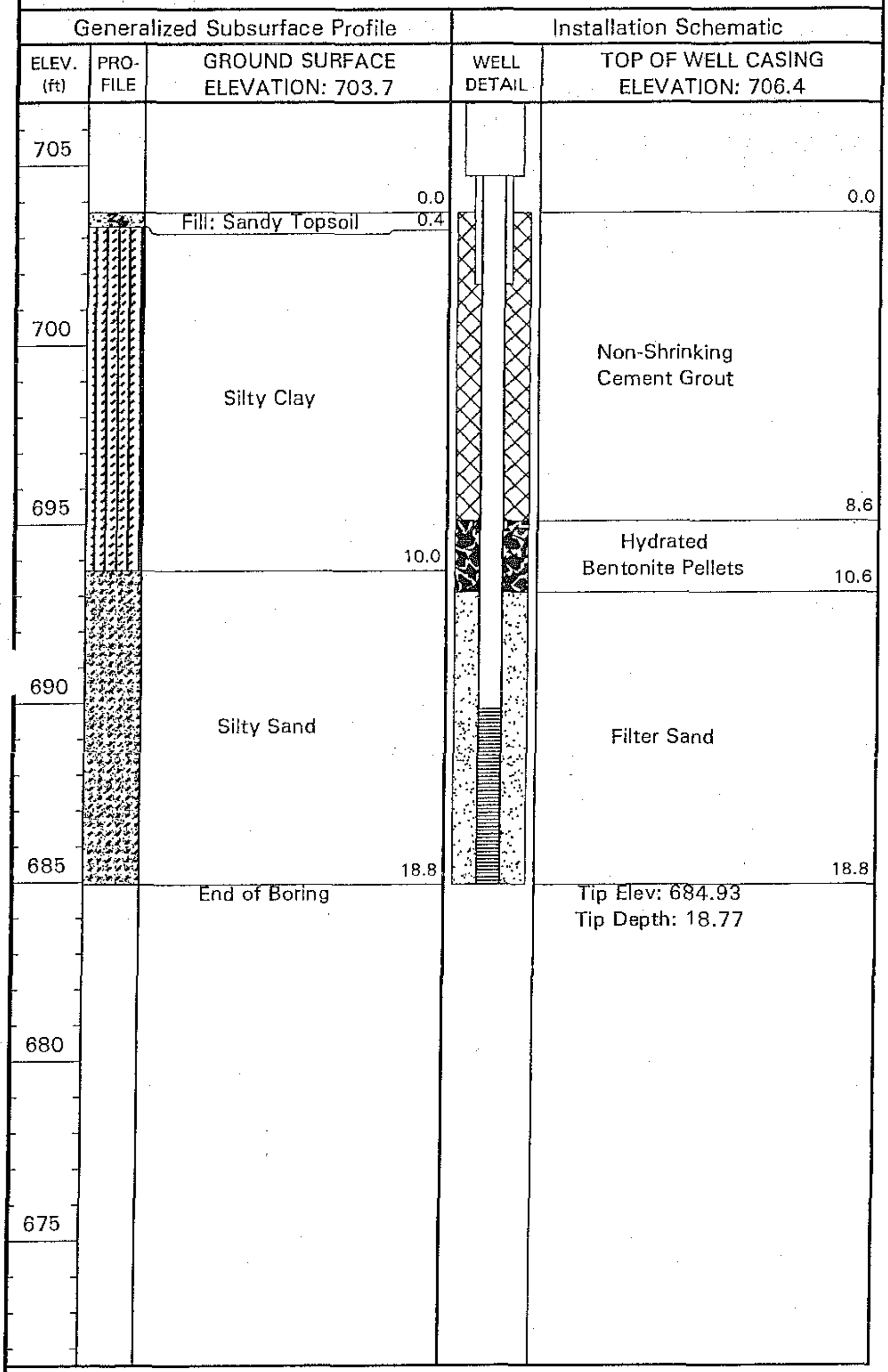
Project Name: *EQ SITE #2 - SOUTHEAST CONTAINER STORAGE AREA*

NTH Proj. No: *13-041308-11*

Project Location: *BELLEVILLE, MICHIGAN*

Checked By: KRO

LOG OF MONITORING WELL



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS

NOTES

[1] For details of subsurface strata, see Log of Test Boring P4-R.

[2] Top of casing & ground surface elevations based on EQ Survey.

[3] Coordinates: E 6003.1, N 6072.9

Started:	*09-28-06*	Casing Diameter:	*2.0 in*
Completed:	*09-28-06*	Casing Length:	*16.47 ft*
Inspector:	*K. Warning*	Casing Type:	*PVC*
Contractor:	*Mateco Drilling Co.*	Screen Diameter:	*2.0 in*
Driller:	*B. Dreyer*	Screen Length:	*5.0 ft*
Equipment:	*CME-95 Drill Rig*	Screen Mesh:	*0.010 in*
Well Type:	*Monitoring*	Screen Type:	*PVC*

FIGURE NO.

LOG OF TEST BORING NO: P-5

NTH CONSULTANTS, LTD.

Project Name: *EQ Site #2 - Southeast Container Storage Area*

Project Location: *Belleville, Michigan*

NTH Proj. No: *13-990953-00*

Checked By: DLH

SUBSURFACE PROFILE / SOIL SAMPLE DATA

GROUND SURFACE ELEVATION: 698.0

ELEV. (FT)	DESCRIPTION	DEPTH (FT.)	SAMP. TYPE/ NO.	BLOWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
695	Gray SILTY CLAY with Some Sand, Trace of Gravel & Organic Matter	3.0	S-1	-- -- --	--				<1
	Brown FINE TO MEDIUM SAND with Some Silt, Trace of Coarse Sand & Gravel		S-2	-- -- --	--				<1
690		9.0	S-3	-- -- --	--				<1
	Brown to Gray SILTY FINE SAND		S-4	-- -- --	--				<1
685		14.3							
	Gray SILT	14.4	S-5	-- -- --	--				<1
	Gray SILTY CLAY with Some Sand & Trace of Gravel	17.0	S-6	-- -- --	--				<1
680	End of Boring								

Elevation scale: 695, 690, 685, 680, 675, 670, 665. Depth scale: 5, 10, 15, 20, 25, 30, 35.

Total Depth: *17 FT*
Drilling Date: *12/06/99*
Inspector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
D *J. Ward*

Water Level Observation:
Groundwater encountered at 9.0 ft bgs.

Notes:

Drilling Method:
Drill rig with 4-1/4" inside-diameter, hollow-stem augers and EnviroCore sampler to end of boring.

Plugging Procedure:
Monitoring well P-5 installed in borehole with screen tip set at 14.0 ft bgs.

FIGURE NO. 5

MONITORING WELL NO: P-5

NTH CONSULTANTS, LTD.

Project Name: *EQ-Site #2 - Southeast Container Storage Area*

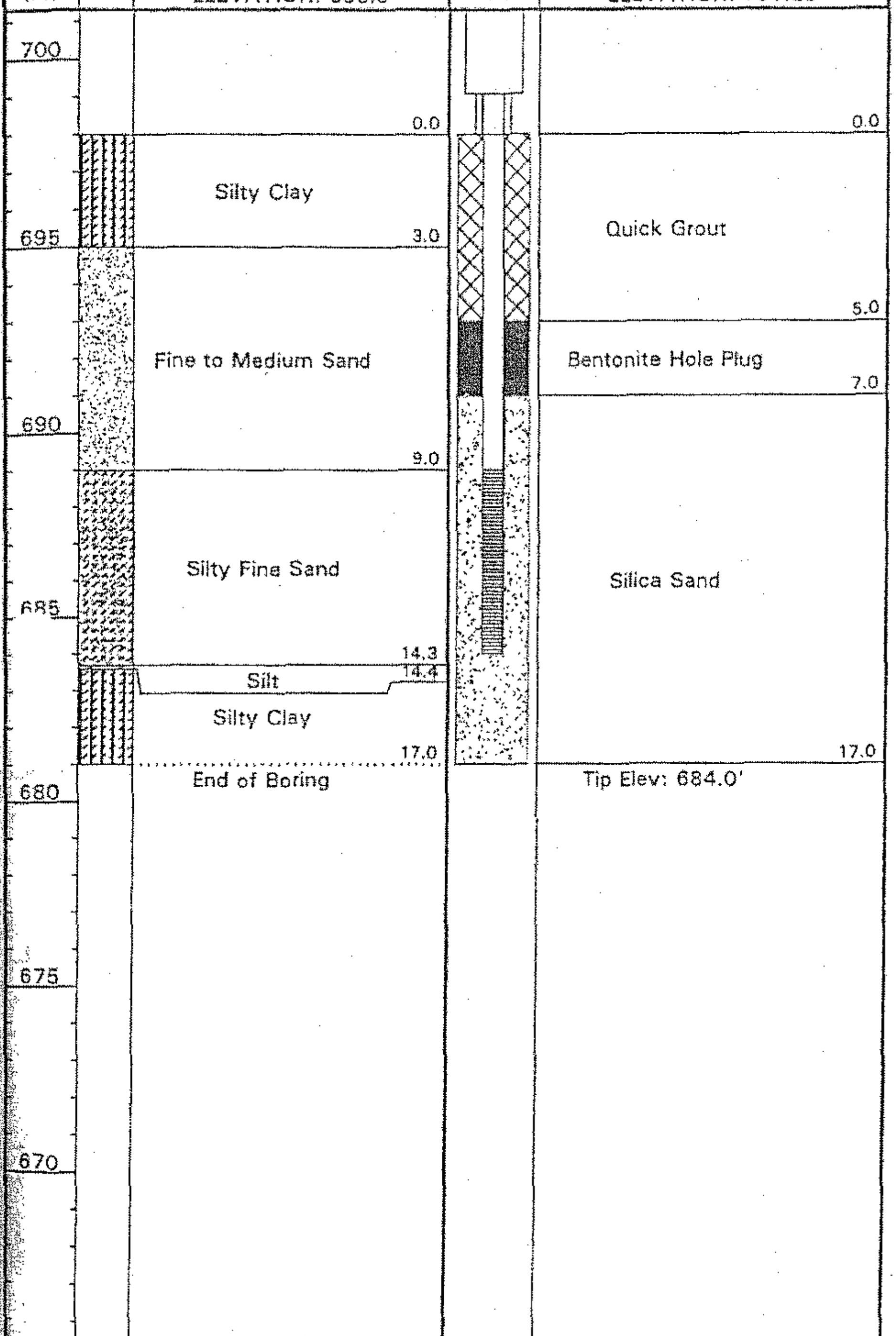
NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: DJH

LOG OF MONITORING WELL

Generalized Subsurface Profile			Installation Schematic	
ELEV. (FT)	PRO-FILE	GROUND SURFACE ELEVATION: 698.0	WELL DETAIL	TOP OF WELL CASING ELEVATION: 701.28



GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/06/99	686.68	(depth @ 14.60 ft)

NOTES

[1] For details of subsurface strata, see Log of Test Boring No. P-5.

Started:	*12/06/99*	Casing Diameter:	*2.0 inches*
Completed:	*12/06/99*	Casing Length:	*12.28 feet*
Inspector:	*D. Hohner*	Casing Type:	*PVC*
Contractor:	*Alliance Environmental, Inc.*	Screen Diameter:	*2.0 inches*
Driller:	*J. Ward*	Screen Length:	*5.0 feet*
Equipment:		Screen Mesh:	*0.007 inch*
Well Type:	*monitoring*	Screen Type:	*PVC*

FIGURE NO. 11

LOG OF TEST BORING NO: P-6

NTH CONSULTANTS, LTD.

Project Name: *EQ Site #2 - Southeast Container Storage Area*

Project Location: *Belleville, Michigan*

NTH Proj. No: *13-990953-00*

Checked By: DWH

SUBSURFACE PROFILE / SOIL SAMPLE DATA

GROUND SURFACE ELEVATION: 700.5

ELEV. (FT)	Description	Bottom depth	SAMP. TYPE/ NO.	BLDWS/ 6"	STD.PEN. RESIST. (N)	MOIST. CONT. (%)	DRY DENS. (pcf)	UNCONF. COMP.ST. (psf)	HNu READING (ppm)
700	PAVEMENT: ASPHALT	0.4							
	Gray SAND	1.0							
	Gray SILTY CLAY with Some Sand & Trace of Gravel	5.5	S-1	-- -- --	--				<1
695			S-2	-- -- --	--				<1
	Brown FINE TO MEDIUM SAND with Little Silt	14.0	S-3	-- -- --	--				<1
690			S-4	-- -- --	--				<1
	Brown to Gray SILTY FINE SAND	14.5							
	Brown FINE TO MEDIUM SAND with Little Silt	15.1	S-5	-- -- --	--				<1
685	Gray SILTY CLAY with Little Sand	18.0	S-6	-- -- --	--				<1
	End of Boring								

Elevation scale: 700, 695, 690, 685, 680, 675, 670, 665. Depth scale (FT.): 5, 10, 15, 20, 25, 30, 35.

Total Depth: *18 FT*
Drilling Date: *12/07/99*
Inspector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
Driller: *J. Ward*

Water Level Observation:
Groundwater encountered at 11.0 ft bgs.

Notes:

Drilling Method:
Drill rig with 4-1/4" inside-diameter, hollow-stem augers and EnviroCore sampler to end of boring.

Plugging Procedure:
Monitoring well P-6 installed in borehole with screen tip set at 15.0 ft bgs.

FIGURE NO. 6

MONITORING WELL NO: P-6

NTH CONSULTANTS, LTD.

Project Name: *EQ-Site #2 - Southeast Container Storage Area*

NTH Proj. No: *13-990953-00*

Project Location: *Belleville, Michigan*

Checked By: ᑐ⁻

LOG OF MONITORING WELL

Generalized Subsurface Profile

GROUND SURFACE ELEVATION: 700.5

ELEV. (FT)	Depth	Description
700	0.0 – 0.4	Pavement: Asphalt
	0.4 – 1.0	Sand
	1.0 – 5.5	Silty Clay
695	5.5 – 14.0	Fine to Medium Sand
690		
	14.0 – 14.5	Silty Fine Sand
	14.5 – 15.1	Fine to Medium Sand
685	15.1 – 18.0	Silty Clay
	18.0	End of Boring
680		
675		
670		
665		

Installation Schematic

TOP OF WELL CASING ELEVATION: 700.70

Depth	Description
0.0 – 6.0	Quick Grout
6.0 – 8.0	Bentonite Hole Plug
8.0 – 18.0	Silica Sand
	Tip Elev: 685.5'

GROUNDWATER DATA

DATE	ELEV. (ft.)	COMMENTS
12/07/99	689.24	(depth @ 11.46 ft)

NOTES

[1] For details of subsurface strata, see Log of Test Boring No. P-6.

Started: *12/07/99*
npleted: *12/07/99*
pector: *D. Hohner*
Contractor: *Alliance Environmental, Inc.*
Driller: *J. Ward*
Equipment:
Well Type: *monitoring*

Casing Diameter: *2.0 inches*
Casing Length: *10.2 feet*
Casing Type: *PVC*
Screen Diameter: *2.0 inches*
Screen Length: *5.0 feet*
Screen Mesh: *0.007 inch*
Screen Type: *PVC*

FIGURE NO. 12

Attachment C

Chain of Custody & Monitoring Well Damage Report

(Site II - WDI/MDWTP)

TriMatrix Laboratories, Inc.

5560 Corporate Exchange Court SE • Grand Rapids, M 49512

Chain of Custody Record

COC No. № 66962

Project Manager	Project Name			For Lab Use Only	
Project No.	Sampler (Print)			Rack/Tray No:	
	Sampler Signature			Lab Project #	

Date Sampled	Time Sampled	Matrix*	Composite	Grab	Sample Identification	No. of Containers	No's Correspond to Bottle Packing List / Container Type	Analysis Required/Comments	Sample No.	Filtered Date/Time
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			
							1 2 3 4 5 / 6 7 8 9 10 / 11 12 13 14 15 / 16 17 18 19 20			

Relinquished By:	Date/Time	Received By:	Received to Lab By:	Date/Time	Logged in By:	Date/Time

*Matrix: Water (W), Wastewater (WW), Soil (SOIL), Sludge (SLG), Air, Oil, Waste (WASTE)

MONITORING WELL INSPECTION/DAMAGE REPORT

DATE: ______________________________

NAME: ______________________________

SITE: ______________________________

***Place a check-mark for any of the items that are not acceptable and provide comments below.**

WELL ID	LOCK	Annular Seal	Protective Casing	Markings	Dedicated Pump	Casing
OB-1A						
OB-2A						
OB-3						
OB-4						
OB-5						
OB-6						
OB-7						
OB-8						
OB-9						
OB-10						
OB-11A						
OB-12						
OB-13						
OB-14						
OB-15						
OB-16						
OB-17						
OB-18						
OB-19R						
OB-20						
OB-21						
OB-22						
OB-23A						
OB-24						
OB-25						
OB-26A						
OB-27A						
OB-28						
OB-29						
OB-30						
OB-31AR						
OB-32						
OB-34A						
OB-35A						
OB-36						
OB-37						
OB-38						
OB-39						

WELL ID	LOCK	Annular Seal	Protective Casing	Markings	Dedicated Pump	Casing
OB-40R						
OB-41						
OB-42						
OB-43						
OB-44						
OB-45						
OB-46						
OB-47						

DETAILS OF PROBLEM(S) ENCOUNTERED: ______________________________

____

____

____

____

____

____

ACTIONS REQUIRED TO REMEDY THE PROBLEM(S): ______________________

____

____

____

____

____

SUBMIT THIS FORM IMMEDIATELY TO THE SITE MANAGER AND THE REGULATORY AFFAIRS MANAGER OR THEIR DESIGNEE

Attachment D

Operating Procedures for the Water Level Indicator

(Site II - WDI/MDWTP)

INSTRUCTION MANUAL

ET-89

ELECTRIC TAPE

KECK INSTRUMENTS, INC

KECK TAPE GUARD

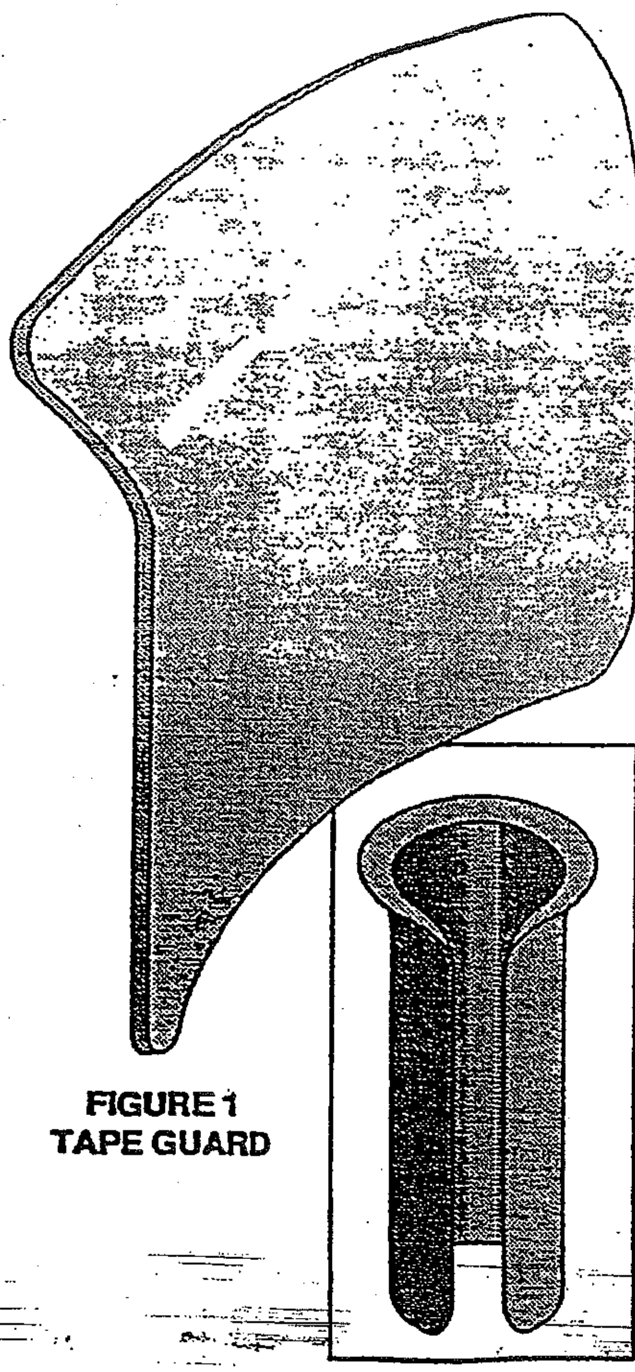


FIGURE 1
TAPE GUARD

The Keck "Tape Guard" was developed to protect instrumentation, tapes and sample tubing from the wearing edges of well casing. Made of smooth flexible polystyrene, the "Tape Guard" easily adapts to any 2" or 4" well.

Instructions

Simply compress the "Tape Guard" and insert

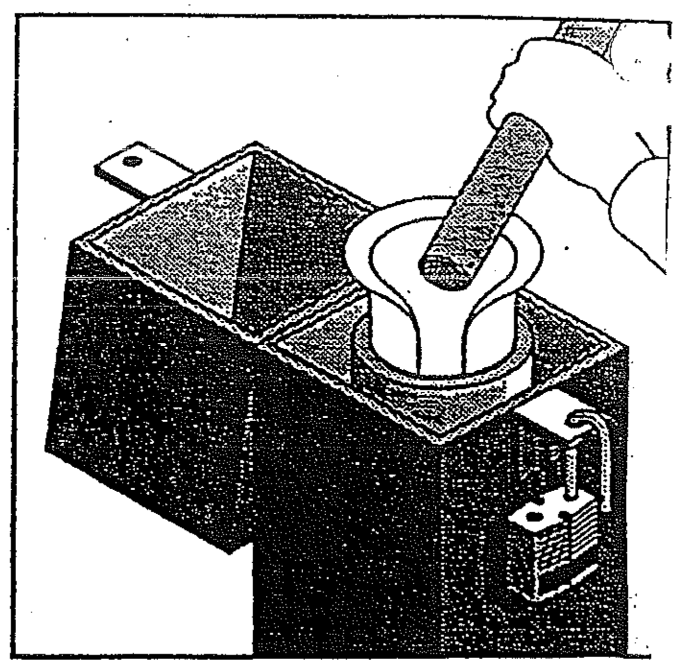


FIGURE 2
TAPE GUARD USAGE

into the opening of any 2" to 4" well pipe. Allo instrumentation, tubing or tape to ride on th smooth surface of the "Tape Guard" to pre wear.

ET-89

The Keck Instruments ET-89 is a portable reel mounted device used to accurately measure water levels in a borehole. Water levels are detected by a 5/8" O.D. stainless steel probe attached to a 100 FT. Tefzel coated engineer's tape. The tape is graduated in 100ths of a foot with metric divisions on the reverse side. The ET-89 relies on fluid conductivity to determine the presence of water and emits on audible signal with light. Controls include a sensitivity adjustment to eliminate false readings due to cascading water or casing effect and a battery test switch.

Operational Procedure

1. Turn the instrument "On" and check the battery voltage by pressing the "Batt Test" button. A dim red light indicates a low battery and should be replaced.
2. Lower the probe down the well to the water surface, the light and buzzer should be activated. At this point adjust the probe sensitivity counter-clockwise until the light and buzzer turn off.
3. With the probe still in contact with the water, adjust the probe sensitivity until the light and buzzer barely activate. In this setting the probe will detect water level and not be effected by condensation from the casing well.
4. Water level measurements can now be taken from the top of the casing.
5. After completion of water level measurements the device should be properly stored.

Maintenance and Cleaning Procedures

1. Remove the three faceplate screws.
2. Release the faceplate using the sensitivity knob to pull the components out of the reel.
3. Make note of the battery location on the circuit board and the position in reel cavity.
4. Remove the 9 volt battery from the connector by grasping the battery and the black connector. Replace with new battery.
5. Position the battery in the notch of the circuit board and align the battery with the recessed slot in the reel.
6. Place the faceplate in the reel and replace the three retaining screws. Do not over tighten these screws.

Decontamination and Cleaning

The ET-89 can be cleaned with any detergent or lab soap such as Liquinox that does not effect polypropylene. The reel should not be submerged at any time but can be wiped with a damp cloth.

Please call our technical staff if further assistance is required at 1-800-542-5681.

Attachment E

Depth to Well Screen for Each Existing Well

(Site II - WDI/MDWTP)

MONITORING WELL INFORMATION
WAYNE DISPOSAL SITE #2 LANDFILL

WELL ID	PROGRAM(S)	T.O.C. ELEV.	SCREEN ELEV.	WELL DEPTH	DESIG.	STRATUM SCREENED
OB-1A	Part 115	706.01	579.9	126	UG	SILT/ROCK
OB-2A	Part 115/MCIX	701.37	587.8	114	DG	SAND
OB-3	Part 115	709.01	577.9	131	DG	SAND
OB-4	Part 115	712.54	638.9	74	UG	SAND
OB-5	Part 115	705.21	603.8	101	DG	SAND
OB-6	Part 115	704.78	627.1	78	DG	SAND
OB-7	Part 115/MCIX	703.59	627	77	UG	SILT/SAND
OB-8	Part 115	707.61	629	79	DG	SAND
OB-9	Part 115	701.20	614.1	87	DG	SAND
OB-10	Part 115	707.84	621	87	DG	SAND
OB-11A	Part 115/MCIX	699.00	611.4	88	DG	SAND
OB-12	Part 115	705.01	620.6	84	DG	SAND
OB-13	Part 115	703.30	619.9	83	DG	SAND
OB-14	Part 115	702.16	600.1	102	DG	SAND
OB-15	Part 115	707.68	617.3	90	DG	SAND
OB-16	Part 115	700.88	596.5	104	DG	SAND
OB-17	Part 115	708.29	626.2	82	DG	SAND
OB-18	Part 111 (MDWTP)	703.09	589.2	114	UG	CLAY/ROCK
OB-19R	Part 111 (MDWTP)	709.18	585.6	124	UG	ROCK
OB-20	Part 111/TSCA	706.25	609.9	96	DG	SAND
OB-21	Part 111(MDWTP)/TSCA	704.98	600.9	104	DG	SAND
OB-22	Part 111	704.01	568.3	136	DG	SAND/ROCK
OB-23A	Part 111(MDWTP)/TSCA	702.74	577.5	125	DG	SAND
OB-24	Part 111(MDWTP)/TSCA	704.62	614.4	90	DG	SAND
OB-25	Part 111/TSCA	711.03	620	91	DG	SAND
OB-26A	Part 111/TSCA	714.16	628.5	86	DG	SAND
OB-27A	Part 111	708.30	636.5	72	DG	SAND
OB-28	Part 111	709.07	583.9	125	DG	SAND
OB-29	Part 111	705.58	609.4	96	DG	SAND
OB-30	Part 111	703.94	607.4	97	DG	SAND
OB-31AR	Part 111/MCIX	700.66	628.1	73	UG	SAND
OB-32	Part 111/MCIX	701.51	565.3	136	UG	ROCK
OB-34A	Part 111/TSCA	711.96	617.8	94	DG	SAND
OB-35A	Part 111	711.35	577.5	134	DG	ROCK
OB-36	Part 111 (MDWTP)	702.15	572.1	130	DG	ROCK
OB-37	Part 111	711.33	572.7	139	DG	ROCK
OB-38	Part 111	714.14	573.4	141	DG	ROCK
OB-39	Part 111	707.59	561.9	146	DG	ROCK
OB-40R	Part 111/TSCA	708.77	610.2	99	UG	SILT/SAND
OB-41	MCIX	701.99	562	140	DG	ROCK
OB-42	MCIX	717.29	624.4	93	DG	SAND
OB-43	MCIX	717.51	595.1	122	DG	SAND
OB-44	MCIX	701.30	639.5	62	DG	SAND
OB-45	Part 115/MCIX	701.28	628	73	DG	SAND
OB-46	MCIX	701.19	600	101	DG	SAND
OB-47	Part 111 (MDWTP)	702.71	594.3	108	DG	SAND
P-1	Part 111 (MDWTP)	703.50	685.0	19	DG	SURFACE SAND
P-2R	Part 111 (MDWTP)	707.00	685.4	22	UG	SURFACE SAND
P-3	Part 111 (MDWTP)	706.88	686.7	20	DG	SURFACE SAND
P-4R	Part 111 (MDWTP)	706.40	684.9	21	UG	SURFACE SAND
P-5	Part 111 (MDWTP)	701.28	684.0	17	DG	SURFACE SAND
P-6	Part 111 (MDWTP)	700.70	685.5	15	DG	SURFACE SAND

UG = Upgradient Well DG = Downgradient Well

Attachment F

WELL WIZARD
Dedicated Sampling Sytems

Installation, Operation and Maintenance User's Guide
Part No 34999

(Site II - WDI/MDWTP)

(This manual is on file at MDEQ-WHMD, Lansing and at Site II.)

Attachment G

Sample Preservation Procedures

(Site II - WDI/MDWTP)

Handling Requirements of Monitoring Parameters

Parameter	Perservation	Holding Time	Bottle Type	Minimum Volume
Total Phenolics	1,2	28 Days	Glass	0.5 L
Sulfate	2	28 Days	Plastic	50 ml*
Total Alkalinity	2	14 Days	Plastic	100 ml*
Fluoride	2	28 Days	Plastic	300 ml*
Chloride	2	28 Days	Plastic	50 ml*
Nitrate/Nitrite	1,2	48 Hrs	Plastic	0.5 L
Arsenic	3,5	6 Mos	Plastic	200 ml**
Cadmium	3,5	6 Mos	Plastic	200 ml**
Calcium	3,5	6 Mos	Plastic	200 ml**
Chromium	3,5	6 Mos	Plastic	200 ml**
Iron	3,5	6 Mos	Plastic	200 ml**
Potassium	3,5	6 Mos	Plastic	200 ml**
Lead	3,5	6 Mos	Plastic	200 ml**
Magnesium	2,3,5	6 Mos	Plastic	200 ml**
Manganese	2,3,5	6 Mos	Plastic	200 ml**
Molybdenum	2,3,5	6 Mos	Plastic	200 ml**
Nickel	2,3,5	6 Mos	Plastic	200 ml**
Sodium	3,5	6 Mos	Plastic	200 ml**
Zinc	3,5	6 Mos	Plastic	200 ml**
Cyanide	2,4	14 Days	Plastic	500 ml
Copper	3,5	6 Mos	Plastic	200 ml**
pH		Immediate	Plastic	25 ml
Bicarbonate	2	14 Days	Plastic	100 ml*
Carbonate	2	14 Days	Plastic	100 ml*
TOC	2,7	28 Days	Glass	100 ml
Specific Conductivity	2	28 Days	Plastic	100 ml
Volatile Organics	2,6	14 Days	Glass	2x40 ml

1) pH<2 with concentrated Sulfuric Acid
2) Store at 4 degrees Centigrade
3) pH<2 with nitric acid
4) pH>12 with sodium hydroxide
5) Filtered in the field using 0.45 micron membrane filters on the time of collection
6) 4 drops HCL, no headspace
7) pH<2 with sulfuric acid

* Note: One liter for all of these parameters stored similarily
** Note: One liter for all of these parameters stored similarily

Attachment H

Ground Water Parameter List

(Site II - WDI/MDWTP)

Table 3. Ground Water Monitoring Parameter List

3.A. Primary Parameters

Benzene	1,2 Dichlorobenzene	Xylene
1,2 Dichloroethane	1,2 Dichloroethene	Ethylbenzene
Methylene Chloride	Toluene	Trichloroethene
1,1,1 Trichloroethane	Vinyl Chloride	1,1 Dichloroethane

PCB-1016[1]	**PCB-1221**[1]	**PCB-1231**[1]
PCB-1242[1]	**PCB-1248**[1]	**PCB-1254**[1]
PCB-1260[1]		

3.B. Secondary Parameters

Potassium	Sodium	Nickel
Chromium(t)	Lead	Molybdenum
Sulfate	Chloride	Bicarbonate
Carbonate	Arsenic	Cyanide[4]
Nitrate	Nitrite	Fluoride
Total Phenolics	Total Organic Carbon	Iron

3.C. Tertiary Parameters

Calcium[2]	Magnesium[2]	Copper[2]
Manganese[2]	Zinc[2]	Cadmium[2]
Silver	Mercury	Selenium
Barium	2,4-D	Endrin
Silvex	Methoxychlor	Toxaphene

3.D. Field Monitoring Parameters[3]

Specific Conductance Temperature pH

Notes:

1	PCB's to be analyzed in samples from wells OB-21, OB-23, OB-24, OB-34R and OBN-40R only.
2	Tertiary parameter that will be measured during detection monitoring.
3.	Parameter to be measured in field for all samples collected
4.	Amenable cyanide to be analyzed if cyanide is detected

Attachment I

Analytical Methods and Target Detection Limits

(Site II - WDI/MDWTP)

Method Detection Limits - PCBs

Parameter	Detection Limit ppm (mg/l)	Detection Limit ppb (ug/l)	USEPA Method
PCB-1016	0.0001	0.1	8082
PCB-1221	0.0001	0.1	8082
PCB-1232	0.0001	0.1	8082
PCB-1242	0.0001	0.1	8082
PCB-1248	0.0001	0.1	8082
PCB-1254	0.0001	0.1	8082
PCB-1260	0.0001	0.1	8082

Note:
Methods referenced from Test Methods for Evaluating Solid Waste,USEPA, SW-846

WHMD Operational Memo Gen-8, Revision 7, 11/21/05

Method Detection Limits - Organics

Parameter	Detection Limit ppm (mg/l)	Detection Limit ppb (ug/l)	USEPA Method
1,1-Dichloroethane	0.001	1.0	8260/8021
1,2-Dichloroethane	0.001	1.0	8260/8021
1,2-Dichloroethene	0.001	1.0	8260/8021
1,1,1-Trichloroethane	0.001	1.0	8260/8021
Trichloroethene	0.001	1.0	8260/8021
Vinyl Chloride	0.001	1.0	8260/8021
Methylene Chloride	0.005	5.0	8260/8021
1,2-Dichlorobenzene	0.001	1.0	8260/8021
Benzene	0.001	1.0	8260/8021
Toluene	0.001	1.0	8260/8021
Ethylbenzene	0.001	1.0	8260/8021
Xylenes (Total)	0.003	3.0	8260/8021

Note:
Methods referenced from Test Methods for Evaluating Solid Waste,USEPA, SW-846

WHMD Operational Memo Gen-8, Revision 7, 11/21/05

Method Detection Limits - Inorganics

Parameter	Code	MDL ppm (mg/L)	MDL ppb (ug/L)	Method Reference
Alkalinity (Total)	ALK	20	20000	310.1
Bicarbonate Alkalinity	BAL	10	10000	310.1
Carbonate Alkalinity	CAL	10	10000	310.1
Chloride	CL-	1	1000	325
Cyanide (Total)	TCN	0.005	5	335.2/9014
Fluoride	F-	0.1	100	340.2
Nitrate/Nitrite	NPN	0.01	10	353.2
pH	PHN	N/A	N/A	150.1
Phenolics (Total)	PHN	0.01	10	420.4/9066
Specific Conductivity	CON	5(mmhos/cm)	5 (mmhos/cm)	120.1
Sulfate	SO4	2	2000	375.4
TOC	TOC	0.5	500	415.1

Note:
Methods referenced from:

1 Test Methods for Evaluating Solid Waste, USEPA SW-846
2 Standard Methods for the Examination of Water & Wastewater
3 USEPA Methods for Chemical Analysis of Water & Wastewater
4 Methods for Organic Analysis of Municipal & Industrial Wastewater

WHMD Operational Memo Gen-8, Revision 7, 11/21/05

Method Detection Limits - Metals

Parameter	Code	MDL ppm (mg/L)	MDL ppb (ug/L)	Method Reference
Arsenic	AS	0.001	1	200.8/6020
Cadmium	CD	0.0002	0.2	200.8/6020
Calcium	CA	1	1000	200.7/6010B
Chromium	CR	0.02	20	200.8/6020
Copper	CU	0.01	10	200.7/6010B
Iron	FE	0.02	20	200.7/6010B
Lead	PB	0.001	1	200.8/6020
Magnesium	MG	1	1000	242.1/7450
Manganese	MN	0.005	5	200.8/6020
Molybdenum	MO	0.025	25	200.7/6010B
Nickel	NI	0.025	25	200.7/6010B
Potassium	K	0.1	100	200.7/6010B
Sodium	NA	1	1000	200.7/6010B
Zinc	ZN	0.01	10	200.7/6010B

Note:
Methods referenced from:

1 Test Methods for Evaluating Solid Waste, USEPA SW-846
2 Standard Methods for the Examination of Water & Wastewater
3 USEPA Methods for Chemical Analysis of Water & Wastewater
4 Methods for Organic Analysis of Municipal & Industrial Wastewater

WHMD Operational Memo Gen-8, Revision 7, 11/21/05

Quality Control Frequency Summary

Type	Description	Inorganics	Organics
Blank	Method or preparation	Minimum one per analytical batch*	Minimum one per analytical batch*
Duplicate (Inorganics)	Field and/or duplicate of sample	Minimum one per analytical batch	---
Laboratory Control Sample	Analyte fortified blank	Minimum one per analytical batch	Minimum one per analytical batch
Laboratory Control Sample Duplicate (if requested)	Analyte fortified blank	Minimum one per analytical batch	Minimum one per analytical batch
Matrix Spike	Analyte fortified blank	Minimum one per analytical batch	Minimum one per analytical batch
Matrix Spike	Duplicate of analyte fortified sample	---	Minimum one per analytical batch

The above is a general summary of quality control frequency.
A more complete definition of the above plus additional QC specific to each department will be found in the analytical method SOPs.

* Note: Maximum of 20 samples per analytical batch or monthly, whichever is more frequent.

Attachment J

Field Measurement Equipment and Procedures
Yellow Springs Instrument Co (YSI) Equipments Instructions
(pH, specific conductivity & temperature)

(Site II - WDI/MDWTP)

(This manual is on file at MDEQ-WHMD, Lansing & at Site II – enclosed via CD)

Attachment K

Current Laboratory's Quality Assurance Manual

(Site II - WDI/MDWTP)

(This manual is on file at MDEQ-WHMD, Lansing & at Site II - & enclosed via CD)

Attachment L

Statistical Monitoring Plan for Ground Water Monitoring Data

(Site II - WDI/MDWTP)

Statistical Procedures for Ground Water Monitoring Program
Michigan Disposal Waste Treatment Plant

1.0 Introduction

The following statistical procedures are used to analyze the statistical significance of measured concentrations of ground water monitoring parameters at the Michigan Disposal Waste Treatment Plant (MDWTP). This program was developed in accordance to meet the requirements of 40 CFR 264.97 and Rule 506 of the Administrative Rules for Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1995 PA 451, as amended.

2.0 Overview of Statistical Procedures

The statistical evaluation program for MDWTP is designed to signal statistically significant concentrations of monitoring parameters measured in samples collected quarterly or semi-annually from the wells in the monitoring well network. Different statistical techniques are used for different monitoring parameters depending on the nature of the data. The statistical comparisons are either intrawell (each well is compared to its own background) or based on the detection limit, which is generally the standard laboratory detection limit. When intrawell statistical comparisons are used, the statistical procedure is selected based on the degree that the background data are censored.

The monitoring parameters measured during each analysis are divided into four categories: primary parameters, secondary parameters, tertiary parameters, and field parameters (see Figure 1). The list of primary parameters is comprised of volatile organic compounds that are known to present within the waste. As these compounds do not generally occur in nature at measurable concentrations, a confirmed concentration above a statistically based detection limit for any single parameter will result in a statistically significant increase as defined by the operating license.

The secondary monitoring parameters are mainly inorganic parameters that are found in elevated concentrations within the leachate. As these parameters are naturally occurring, their presence in ground water may or may not be an indication of a release and it is often necessary to determine the significance of changes in concentration relative to estimates of the true background concentrations. In this program secondary parameters are used to detect a possible release in the following ways. First, a confirmed statistically significant change in the concentration of any two (or more) secondary parameters in a single well will result in a statistically significant increase as defined by the operating license. This approach is designed to detect relatively subtle changes in ground water quality as evidenced by several parameters at once. In addition, a confirmed, order of magnitude increase (10 times the background concentration) in the concentration any single parameter will also result in a statistically significant increase. This will ensure that a large increase in one secondary parameter is appropriately investigated.

The tertiary parameters are those parameters for which background has already been established. The tertiary parameters in this program are further subdivided into two groups: parameters that have an already established background but will not be measured during detection monitoring, and parameters that will continue to be measured during detection monitoring but will not be subjected to the statistical analyses described below. The former group is not being analyzed because they do not appear to be useful monitoring parameters. The analytical results from the latter group will be used to evaluate potential non-release related ground water quality changes, such as might be caused by well corrosion and grout contamination. These parameters will not be analyzed statistically because they are poor indicators of a release.

Field parameters are those parameters measured in the field during sample collection, mainly for the purpose of showing that ground water quality has stabilized during well purging. These parameters will not be analyzed statistically.

3.0 Description of Statistics for Detection Monitoring

The statistical tests to be used for all detection monitoring events are described in the following section. This section includes the definition and procedures for calculating "background", and the procedures for conducting the statistical analyses.

3.1 Parameters

The parameter list for the ground water monitoring program is presented on Figure 1. The following descriptions of background calculation and statistical analyses are presented separately for the primary and secondary parameters, respectively.

3.2 Background

The background statistics for all monitoring parameters are to be calculated using the methods described below. The recalculation of the moving background for secondary parameters, as described below, will also follow these procedures. For new wells, or replacement wells that cannot utilize the data from the replaced well, an interim background as defined in section 3.3 will be used for applicable secondary parameters until eight samples are collected. Then the background described below will apply.

Primary Parameters - The decision of whether or not there is a statistically significant increase in a primary parameter is essentially the decision of whether or not the parameter is present in the ground water. For all of the primary parameters the occurrence of the parameter above the laboratory's reported detection limit is considered to be a statistically significant event and resampling must be initiated to confirm or refute the occurrence.

Secondary Parameters - Determination of the initial intrawell background statistics was completed utilizing the first eight sampling events beginning in 1988. However, beginning at the end of 1995, each time four new analyses were completed, the oldest four measurements have been dropped from the database, the next four added, and the background statistics recomputed. This is repeated each year keeping about a six year lag between the background period and the detection monitoring samples.

If the program moves to semi-annual monitoring (such as in post-closure), the background will be updated every year until the moving background reaches the point where years with semi-annual sampling are to be included. Then the background will be updated every two years (after four new samples have been collected) and thus the moving background window will continue to lag at least six years behind.

The nature of the background statistics and the method of calculation of these statistics for the secondary parameters is based on the degree of censorship of each parameter at each well. The secondary parameter list includes parameters which are highly censored (at least half of the values are below detection limits), those which are moderately censored (more than half the values are above detection) and those which are essentially all above method detection limits (the method detection limits are defined in the operating license). Some parameters exhibit varying degrees of censorship at different wells.

If the background data for a parameter contains at least five detectable background values, but contains some non-detects, the non-detects will be alternately assigned values of zero and the detection limit. If all of the background values are above detection, the background statistics will be calculated from the background data as is. The mean and standard deviations will be calculated using the standard statistical equations for these quantities and the data will be analyzed using control charts as described below. In no case will a standard deviation of less than 10 percent of the mean be used in a statistical test. If the calculated background standard deviation is less than 10 percent of the mean, then 10 percent of the mean will be substituted for the background standard deviation.

If half or more of the intrawell background measurements are below detection limits (4 or more BDL values), then the background statistics will be calculated based on the proportion of values above method detection limits. This quantity will be used to conduct a test of proportions as described below.

3.3 Performance of Statistical Tests

The methods to be used for statistical analyses of all primary and secondary parameters that have a background as defined in Section 3.2 are described below. For new wells, the primary parameters will be evaluated as described below but the secondary parameters will be evaluated using the "interim" statistical procedures contained in Appendix A. For replacement wells, a decision must be made as to whether the existing background from the well replaced is appropriate for the new well. If it is, such as might be expected when a damaged well is replaced by a well screened in the same stratum, then the existing background can be used with the statistical tests described below. If the replacement well can not be placed in the same strata, or the old well is believed to have yielded unrepresentative results, then the replacement well is considered a new well for the purposes of statistical analyses and will be handled as described above.

Primary Parameters - For the primary parameters, any measured concentration of any parameter which is above the laboratory reported detection limit will initiate quadruplicate resampling for confirmation of the affected parameter(s), in accordance with the operating license. If the statistical failure is repeated, then a statistically significant increase is confirmed. If the apparent increase is not confirmed, then normal detection monitoring will be resumed.

Secondary Parameters - The statistical analysis of secondary parameters will be conducted by one of two statistical tests depending on the degree that the intrawell background data are censored. If more than half the data are above method detection limits then a control chart approach will be used. If at least half the background data are below detection limits, a test of proportions will be used to analyze the data. There is also a default provision to investigate a dramatic increase in any single parameter regardless of the results of outcome of the statistics.

If there are statistically significant increases for any two secondary parameters at any single well, and the increases represent less than a ten-fold increase over background, then MDWTP shall undertake the procedures identified in the operating license, including resampling in quadruplicate. In this case, both failures must be verified by resampling in order to confirm the statistical increase. If any single secondary parameter exhibits a ten-fold increase over background, then this occurrence must be verified by quadruplicate resampling. If the increase is confirmed then a statistically significant increase has occurred.

The statistical evaluation of moderately censored or uncensored secondary parameters will be conducted using intrawell statistical comparisons via a control chart approach. The combined Shewhart-CUSUM control chart will be used to analyze the statistical significance of the measured concentrations of secondary parameters. This approach consists of two statistical tests designed to detect different types of evidence of a release. The Shewhart limit is designed to detect a sharp increase in the concentration of a monitoring parameter in a single sample. The CUSUM limit is designed to detect gradual increases in the concentration of a parameter over time. The two techniques will be used as separate statistical tests. That is, failure of either test alone (or both) will signal a statistically significant increase for a given parameter. Therefore, if one parameter fails the CUSUM test and another exceeds the Shewhart limit, then an apparent statistically significant increase will have occurred and confirmation of both failures must be undertaken. Confirmation of an apparent failure of one of the two tests must be confirmed by an additional failure of that particular test.

The Shewhart control chart compares a detection monitoring concentration of a parameter to the intrawell background mean plus a selected number of standard deviations. The test is performed by calculating the standardized mean, Z, for the detection monitoring concentration. As individual samples are collected during each detection monitoring event, the standardized mean for each measured parameter is calculated by:

$$Z = (x_m - x_b)/s_b$$

where: x_b is the intrawell background mean

x_m is the measured concentration during detection monitoring

s_b is the standard deviation of the intrawell background

The value of Z is then simply compared to a selected value, U, which represents the number of standard deviations from the intrawell mean. The Shewhart limit (U), or upper control limit will be 4.5, as recommended in the Interim Final Guidance for Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities (USEPA, 1989). The statistical test is performed by simply comparing the value of Z to the value of U. If Z is greater than U then it is concluded that a statistically significant increase has occurred.

The Shewhart control chart will be used in the following manner. If a secondary parameter(s) exceeds the Shewhart limit and at least two secondary parameters fail a statistical test at any given well during a given sampling event, the well would be resampled in quadruplicate for the offending parameters, and the mean(s) of the quadruplicate analyses would be used to confirm whether the Shewhart limit(s) is exceeded. If there is confirmation, then it would be concluded that there has been a statistically significant increase. If the increase is not confirmed, any unconfirmed measurements would be dropped from the control chart and replaced with the means of the quadruplicates.

The CUSUM control chart is designed to detect a trend of increasing concentrations over time, regardless of whether the Shewhart limit is exceeded or not. In the CUSUM procedure, the cumulative sum of the values for Z - k are tabulated over time, each time a round of samples are analyzed. The value for Z is computed as described above, and k is a selected parameter. During each analysis subsequent to the background determination period, a value for Z - k is computed and added to the previous total. As long as the cumulative total of Z - k is a negative number the cumulative sum (S) remains zero. As positive values accumulate, the value for S is compared to a selected value, h. If S is greater than h, then a statistically significant event has occurred. The values used for k and h will be k = 1 and h = 5, respectively, as recommended (USEPA ,1989).

The CUSUM limit will be utilized in conjunction to the Shewhart limit and proportions test as follows. If the CUSUM limit is exceeded and at least two or more secondary parameters have failed a statistical test at any given well during any given sampling period, quadruplicate resampling of the well in question will be initiated. The mean values of the quadruplicate sample will then be used to recompute S. If S again exceeds h, then the increase is confirmed. If the increase is not confirmed then the mean values of the quadruplicate sampling replace the results of the anomalous (unconfirmed) values within the CUSUM statistic for future analyses. These non-confirmed exceedances must be removed from the CUSUM control chart because their inclusion may cause additional false positive results when subsequent sample results are added to the cumulative sum.

For parameters that contain at least half non-detectable concentrations in the intrawell background database, a statistical test to determine the significance of the proportion of detectable occurrences during detection monitoring will be used. The test of proportions, which is based on the binomial distribution, is statistical test suited to this purpose. This statistical procedure analyzes the significance of an increase in the rate of detectable occurrences over time.

To implement the test of proportions, the proportion of detectable occurrences during the 8 background samples will be compared to the rate of detectable occurrences in the most recent 4 detection monitoring samples. The statistic is computed by the equation:

$$Z^* = \frac{P_m - P_b}{[\,p(1-p)(1/N_m + 1/N_b)]^{0.5}}$$

where:

P_m = proportion of detectable concentrations in the last four detection monitoring samples

P_b = proportion of detectable concentrations in the eight intrawell background samples

N_m = number of detection monitoring samples (4)

N_b = number of background samples (8)

p = weighted proportion defined as:

$$p = \frac{n_m + n_b}{N_m + N_b}$$

where:

n_m = number of detection monitoring samples above method detection limits

n_b = number of background samples above method detection limits

The value of Z* is then simple compared to a critical value, Z_c, obtained from standard tables for the normal variate, Z, at the desired level of significance. The test will be conducted at the 0.05 level of significance, therefore Z_c is equal to 1.645. Any value of Z* greater than Z_c signals a statistical failure for that parameter.

Each time a new detection monitoring sample is collected, the result would be added to the previous three samples for determining the proportion of detectable occurrences. Thus, both the background and detection monitoring proportions involve a moving window, with the background lagging at least six years behind the window of detection monitoring. If detection limits are lowered during the monitoring program, the proportion of detectable occurrences will be the proportion of results above the older background detection limit until the background is updated to include the new lower detection limits. For example, if the old detection limit was 20 and the new detection limit is 10, then only concentrations above 20 (even though a concentration of 11 or above is now "detectable") will be considered detectable until the moving background window is based on samples with a detection limit of 10.

MDWTP will use the proportions test as follows. If there is a statistically significant increase in any two secondary parameters at a particular monitoring well (i.e. two failures of the test of proportions or a combination of control chart and proportions test failures), then resampling in quadruplicate would be initiated to confirm the suspected increase. Confirmation would be completed if both failures are repeated.

To guard against the unlikely possibility of a large increase in a single secondary parameter going unflagged by the above statistical program, MDWTP will consider any concentration of a secondary parameter that is greater than 10 times the background concentration (or the reported detection limit for highly censored parameters) as a default violation of the statistical tests described above. This will ensure that clearly anomalous data are evaluated even if only a single secondary parameter is affected.

Figure 2. Method for Computing Statistical MDL (Reproduced from Nielsen, 1991)

1. Select four concentrations in the range of the hypothesized MDL. For example, for Benzene we might select concentrations of 4, 8, 12, and 16 mg/L.

2. Prepare 16 samples; that is 4 replicates at each of the 4 spiking concentrations.

3. Multiple compounds may be examined simultaneously by including them in the same samples; however, the order of their concentrations should be randomized so that one sample does not contain all of the lowest concentrations and another sample all of the highest concentrations.

4. Introduce these 16 samples in the usual daily workload of two or more analysts (e.g., two analysts would receive eight samples each). It is essential that the analysts be *completely* blind to which compounds are present in the samples and their respective spiking concentrations, and that they simply be instructed to perform the standard analytic method in question (e.g., Method 624 VOC Scan).

5. The results of the analysis should be recorded as the square root of the ratio of the compound peak area to the internal standard; that is,

$$\text{response signal} = \sqrt{\frac{\text{peak area count}}{\text{internal standard area count}}} = y_i \qquad (13.4a)$$

Transform the spiking concentration

$$x_i = \sqrt{x^*_i - 0.1} - \sqrt{0.1} \qquad (13.4b)$$

Where x^* is the original spiking concentration

6. For each compound, compute the slope of the regression line of the instrument response signal (y) on the targeted concentration (x) as:

$$b = \frac{\sum_{i=1}^{16}(x_i - \bar{x})(y_i - y)}{\sum_{i=1}^{16}(x_i - \bar{x})^2} \qquad (13.5)$$

Where x is the average of the four target concentrations, and Y is the average of the 16 instrument response signals as defined above.

7. For each compound, compute the variance of deviations from the regression line as:

$$s^2_{y,x} = \sum_{i=1}^{16} (y_i - \hat{y}_i)^2/(16-2) \qquad (13.6)$$

Where $\hat{y}_i = y_i + b(x_i - \bar{x})$ is the predicted instrument response for target concentration x_i.

8. The method detection limit for n=16 samples is then computed as:

$$MDL^* = (3.46 s_{y,x}/b)\sqrt{1 + \frac{1}{16} + \bar{x}^2/\sum_{i=1}^{16}(x_i - \bar{x})^2} \qquad (13.7a)$$

Where 3.46 is the $\alpha = \beta = .95$ percentage of the noncentral t distribution on $16-2=14$ degrees of freedom. To express MDL in the original metric (example μ/L), compute:

$$MDL = (MDL^*)^2 + 0.632456\ MDL^* \qquad (13.7b)$$

Appendix A. Interim Statistical Procedures and Background Data for New Monitoring Wells

ATTACHMENT

STATISTICAL PROCEDURE

Two statistical tests will be used to determine if the concentrations of hazardous waste constituents exceed their respective background in a given monitoring well or sump. The sign-test will be used to determine if there is an increase in the concentrations of a significant number of parameters, independent of the magnitude of the changes. The t-test with Continuity Correction will be used to detect a significant increase in the concentration of any individual parameters. This attachment describes the sign-test, the t-test with Continuity Correction, and then the application of these tests at the

A. The Sign-Test

The sign-test does not assume any particular distribution for the parameter data. Any data below the limit of quantification will be treated as having a value of one-half the limit of quantification. Starting with the first sampling period, a comparison is made for each parameter between the mean of its background values and the mean of its foreground values. If the mean of the foreground values is greater than the mean of the background values, a plus (+) is assigned to that measurement data. If the mean of the foreground values is less than the mean of the background values, a minus (-) is assigned. A zero (0) is assigned for equivalent means.

The hypothesis tested is the null hypothesis, H_0, that background values are greater than or equal to foreground values, against the alternative hypothesis, H_1, that the foreground values are greater than background values. The test statistic for this test is:

$$T = \text{total number of pluses}$$

Large values of T indicate that a plus is more probable than a minus, as stated by the alternative hypothesis. The critical region corresponds to a value of T greater than or equal to (n-t), where n is the total amount of pluses and minuses. The term t is found from Table 1 by entering the table at n and finding the largest tabled value of alpha that is less than or equal to the significance (0.05 in this case). The value of y corresponding to alpha is t.

In the case where there are no table entries, alpha, which are less than or equal to the significance (0.05 in this case), it is necessary to set t = -1; the RCRA Permit Writer's Manual describes this situation thusly:

> "At a level of significance of 0.05, this test requires that five sample events be compared before the test is appropriate (before trends can be deduced)."[1]

The procedure is concluded by comparing the quantity T with the quantity n-t. If T is greater or equal to n-t, the null hypothesis, H_0, is rejected and the alternate hypothesis, H_1, accepted, establishing significance. On the other hand, when T is less than n-t, the null hypothesis H_0 is maintained and no significance is demonstrated.

The RCRA Permit Writer's Manual describes the sign-test as "well-known".[2] Indeed, the sign-test is described in many statistics texts. The RCRA Permit Writer's Manual, for example, mentions[3] Conover (1971)[4]. A treatment of the sign-test may also be found in Siegel[5].

The basic concept behind the sign test is the reduction of two sets of continuous data (i.e., the background and foreground observations) to one set of dichotomous data (i.e., the set of pluses and minuses), and the subsequent application of the binomial test to the dichotomous data set.

This approach is noted for its great power. Siegel writes about the power of this approach, the application of the binomial test to continuous data that have been dichotomized:

> "...if the data are basically dichotomous, even though the variable has an underlying continuous distribution, the binomial test may have no more powerful alternative."[6]

TABLE 1

BINOMIAL DISTRIBUTION

Alpha = $P[X \le y]$ for $b(X;n,0.50)$

n	y	Alpha
1	0	0.5000
1	1	1.0000
2	0	0.2500
2	1	0.7500
2	2	1.0000
3	0	0.1250
3	1	0.5000
3	2	0.8750
3	3	1.0000
4	0	0.0625
4	1	0.3125
4	2	0.6875
4	3	0.9375
4	4	1.0000
5	0	0.0313
5	1	0.1875
5	2	0.5000
5	3	0.8125
5	4	0.9687
5	5	1.0000
6	0	0.0156
6	1	0.1094
6	2	0.3437
6	3	0.6562
6	4	0.8906
6	5	0.9844
6	6	1.0000
7	0	0.0078
7	1	0.0625
7	2	0.2266
7	3	0.5000
7	4	0.7734
7	5	0.9375
7	6	0.9922
7	7	1.0000
8	0	0.0039
8	1	0.0352
8	2	0.1445
8	3	0.3633
8	4	0.6367
8	5	0.8555
8	6	0.9648
8	7	0.9961
8	8	1.0000
9	0	0.0028
9	1	0.0195
9	2	0.0898
9	3	0.2539
9	4	0.5000
9	5	0.7461
9	6	0.9102
9	7	0.9805
9	8	0.9980
9	9	1.0000
10	0	0.0010
10	1	0.0107
10	2	0.0547
10	3	0.1719
10	4	0.3770
10	5	0.6230
10	6	0.8281
10	7	0.9453
10	8	0.9893
10	9	0.9990
10	10	1.0000
11	0	0.0005
11	1	0.0059
11	2	0.0327
11	3	0.1133
11	4	0.2744
11	5	0.5000
11	6	0.7256
11	7	0.8867
11	8	0.9673
11	9	0.9941
11	10	0.9995
11	11	1.0000
12	0	0.0002
12	1	0.0032
12	2	0.0193
12	3	0.0730
12	4	0.1938
12	5	0.3872
12	6	0.6128
12	7	0.8062
12	8	0.9270
12	9	0.9807
12	10	0.9968
12	11	0.9998
12	12	1.0000
13	0	0.0001
13	1	0.0017
13	2	0.0112
13	3	0.0461
13	4	0.1334
13	5	0.2905
13	6	0.5000
13	7	0.7095
13	8	0.8666
13	9	0.9539
13	10	0.9888
13	11	0.9983
13	12	0.9999
13	13	1.0000
14	0	0.0001
14	1	0.0009
14	2	0.0065
14	3	0.0287
14	4	0.0898
14	5	0.2120
14	6	0.3953
14	7	0.6047
14	8	0.7880
14	9	0.9102
14	10	0.9713
14	11	0.9935
14	12	0.9991
14	13	0.9999
14	14	1.0000
15	0	0.0000
15	1	0.0005
15	2	0.0037
15	3	0.0176
15	4	0.0592
15	5	0.1509
15	6	0.3036
15	7	0.5000
15	8	0.6964
15	9	0.8491
15	10	0.9408
15	11	0.9824
15	12	0.9963
15	13	0.9995
15	14	1.0000
15	15	1.0000

B. The t-Test with Continuity Correction

Statistical Concept: This section describes the application of Continuity Correction to Cochran's Approximation to the Behrens-Fisher Student's t-test (i.e., the RCRA t-test, or "Basic Statistical Procedure") in order to correct several of the difficulties with the RCRA version. Continuity Correction, to some extent, alleviates the following difficulties with the t-test:

1. Parameters at or near detection limit.
2. Data too discrete.
3. Observations nearly constant

Continuity Correction does not alleviate the other difficulties associated with mis-application of the t-test:

4. Mis-representative variance (i.e., observations not independent)
5. Imbalance between risk of false positives and failure to detect changes that are actually present (caused by too many applications of the test).
6. Inappropriateness of the t-test when there are only very small numbers of observations.

Although the employment of Continuity Correction does not provide relief from Problems 4, 5 and 6, the circumstances of data collection and application of the t-test partially mollify problems 4 and 5. The problem of the lack of independent observations still exists when four samples are taken from the same well in resampling. The use of the t-test in limited situations, rather than as an initial exploratory tool, mitigates problem 5.

We will use Cochran's Approximation to the Behrens-Fisher Student's t-test (i.e., the RCRA t-test, or "Basic Statistical Procedure") with two adjustments for continuity:

1. The variance, s^2, of each data set will be computed in a manner that takes into account the fact that each data point represents a range of possible values rather than a single precisely determined real number.

2. The standard error of the mean (used in the denominator of the equation for the t-statistic) acts as an indicator of the precision with which the mean of a data set has been determined. A lower limit to the standard error of the mean will be used to prevent it from decreasing beyond the precision of the analytical precision, thus inflating the t-statistic.

Continuity Correction is appropriate when data observations do not represent precisely determined real numbers but a range of possible values. Suppose, for example, that the laboratory test for a chemical parameter has a limit of quantification of 30 units and that the test is able to generate results with a precision of 10 units. The test has a discrete set of possible outcomes:

<30 units (i.e., below limit of quantification)
30 units (i.e., at limit of quantification)
40 units
50 units
60 units
etc.

Each of these outcomes does not represent a specific point on the real number line but rather a range of possible values established by the laboratory techniques and instrumentation. The outcome "<30 units" indicates any value from 0 units up to 30 units. The outcome 50 units indicates any value from 45 units to 55 units. The outcome 30 units probably indicates any value from 25 to 35 units. Each of these outcomes thus represents a range of possible values.

Continuity Correction involves doing computations in a way that acknowledges that the data represent ranges on the real number lines, not specific points.

The t-test requires the calculation of the mean of each of two sets of data (the background set and the foreground set). The mean = $(x_1 + \ldots + x_n)/n$. If we regard each x_i as representing a range, in finding the mean using this formula we should use the midpoint of the range for x_i. For example, if the limit of quantification is 30 units, an observation of "<30 units" would be treated as 15 units in calculating the mean.

The t-test also requires the calculation of the variance of each of the two data sets. The equation for the variance is

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2$$

Each of the terms of the summation has the form $(x_i - \bar{x})^2$. To apply Continuity Correction it is necessary to treat each observation as representing a range of values from $x_i - \Delta_i$ through $x_i + \Delta_i$, and compute each term of the form $(x_i - \bar{x})^2$ as the mean of all possible values that would result if x_i were replaced by each real number from $x_i - \Delta_i$ up to $x_i + \Delta_i$.

Specifically, instead of $(x_i - \bar{x})^2$, we use

$$\frac{1}{2\Delta} \int_{x_i - \Delta_i}^{x_i + \Delta_i} (u - \bar{x})^2 \, du.$$

This expression simplifies, through calculation of the integral, to

$$(x_i - \bar{x})^2 + (1/3)\, \Delta_i^2.$$

Using this expression in the place of $(x_i - \bar{x})^2$ gives us a modified equation for the variance

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} \left[(x_i - \bar{x})^2 + (1/3)\Delta_i^2\right]$$

In the example considered earlier, where the limit of quantification was 30 units and values above 30 units were obtained to the closest 10-unit level, we would treat an observation "<30 units" as having $x_i = 15$ and $\Delta_i = 15$. An observation of "30 units" would be treated as having $x_i = 30$ and $\Delta_i = 5$. An observation of "40 units" would be treated as having $x_i = 40$, $\Delta_i = 5$.

The expression for the variance s^2 has a very natural interpretation. The numerator of the expression, i.e.,

$$\sum_{i=1}^{n} \left[(x_i - \bar{x})^2 + (1/3)\,\Delta_i^2\right]$$

represents the sum of the second moments of the various observations about the mean. Each of the summands,

$$(x_i - \bar{x})^2 + (1/3)\,\Delta_i^2,$$

consists of two terms:

a. The quantity $(1/3)\Delta_i^2$ is the second moment of the uniformly distributed range of points from $x_i - \Delta_i$ up to $x_i + \Delta_i$ about its mean x_i.

b. The quantity $(x_i - \bar{x})^2$ represents the contribution made by observation x_i to the second moment about $\bar{x}$ if the observation were concentrated at the single point x_i.

That the expression $(x_i - \bar{x})^2 + (1/3)\Delta_i^2$ gives the second moment of the range of values from $x_i - \Delta_i$ through $x_i + \Delta_i$ about $\bar{x}$ is the consequence of the theorem that the second moment of a set of points about an arbitrary real number is equal to the sum of (1) the second moments of the points about their own mean and (2) the second moment the points would have about the real number if the set of points concentrated into a single point located at their mean.

The t-test requires calculation of the t-statistic

$$t^* = (\bar{x}_m - \bar{x}_b) \;/\; (s_m^2/n_m + s_b^2/n_b)^{0.5},$$

Where:

n_m = the number of foreground observations,

n_b = the number of background observations,

$\bar{x}_m$ = the mean of the foreground observations,

$\bar{x}_b$ = the mean of the background observations,

s_m^2 = the variance of the foreground observations, and

s_b^2 = the variance of the background observations.

In this equation for t*, the numerator is the difference between the means of the two data sets. The size of the difference is evaluated in terms of the denominator, which is the standard error of the difference of the two means. This standard error of the difference of the means is computed as the square root of the sum of the squares of the standard errors of each of the two means. The standard error expressions are:

$s_m/\sqrt{n_m}$ = the standard error of the foreground mean, and

$s_b/\sqrt{n_b}$ = the standard error of the background mean.

The standard error quantities are intended as indicators of how precisely each mean has been established. As a general rule of thumb, we would expect that there is a probability of about 95% that the true mean (i.e., the mean of the population from which the sample was drawn) differs from the sample mean by less than two standard errors.

The square of the standard error of the estimator of the mean may be called the "variance of the mean". Thus:

$W_m = s_m^2/n_m$ = the variance of the foreground mean, and

$W_b = s_b^2/n_b$ = the variance of the background mean.

Suppose in the example described above, where the limit of detection was 30 units, that one data set consisted of a series of identical observations "<30 units". In this situation, the precision with which the mean is determined is not increased by having a great number of observations. No matter how many observations of "<30 units" we have, all we know about the mean is that it probably lies between 0 units and 30 units. It would be appropriate in this situation to regard the mean, $\overline{x}$, as 15 units (i.e., one-half the limit of quantification), and to regard the standard error of the mean as 7.5 units (i.e., one quarter the limit of quantification, or one-half of Δ_i). To say that the true mean (i.e., the mean of the population from which the sample was drawn) lies between 0 units and 30 units would then be equivalent to saying that it lies within two standard errors of the sample mean, $\overline{x}$.

Suppose, again as in the example described above, that the precision of the analytical procedure was 10 units, so that 30 units, 40 units, 50 units, etc., were the possible observed values. Suppose that one data set consisted entirely of observations of "50 units". No matter how many observations of "50 units" we have, all we know about the mean is that it probably lies between 45 units and 55 units. It would be appropriate in this situation to regard the mean, $\overline{x}$, as 50 units and to regard the standard error of the mean as 2.5 units (i.e., one-quarter of the precision, or one-half of Δ_i). To say that the true mean (i.e., the mean of the population from which the sample was drawn) lies between 45 units and 55 units would then be equivalent to saying that it lies within two standard errors of the sample mean $\overline{x}$.

For each of the two data sets, when the variance of the mean is computed, care should be taken that its square root, the standard error of the mean, is not less than precision of the analytical procedure is able to establish.

Specifically, a Lower Limit for the Variance of the Mean (LLVOM) should be computed:

$$LLVOM = \frac{1}{n}\sum_{i=1}^{n}\left[\frac{\Delta_i}{2}\right]^2 \text{, where}$$

Δ_i = one half the limit of quantification if the observation x_i is below the limit of quantification, or one-half the precision of the analytical procedure otherwise.

If the variance of the mean ($W = s^2/n$) is less than LLVOM, it should be replaced by the quantity LLVOM.

In the case where all the observations of a data set are below the level of quantification, the standard error of the mean will thus be treated as one quarter of the limit of quantification. In the case where all the observations of a data set are at a constant value at or above the level of quantification, the standard error of the mean will thus be treated as one quarter of the precision.

Statistical Procedure: The null hypothesis, H_0, to be tested states that the background mean is greater than or equal to the foreground mean. The alternate hypothesis, H_1, states that the foreground mean exceeds the background mean.

In general, when an observation is below the minimum detection limit (MDL), we will use x_i = MDL/2 and Δ_i = MDL/2. If an observation is at or above the level of quantification, we will set x_i = the observed value and Δ_i= one-half the difference between the next possible higher observed value and x_i (determined by the analytical process and instrumentation).

The mean of a set of values $x_1, \ldots, x_n$ will be computed by $\bar{x} = (x_i + \ldots + x_n)/n$ and the variance s^2 will be computed by:

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} \left[(x_i - \bar{x})^2 + (1/3)\Delta_i^2\right]$$

The variance of the mean, W, will be computed as s^2/n. W will be compared with the quantity

$$\text{LLVOM} = \frac{1}{n}\sum_{i=1}^{n} \left[\frac{\Delta i}{2}\right]^2$$

If the computed W is less than LLVOM it will be replaced by LLVOM.

Except for these modifications, the RCRA t-test computational procedure will be unchanged. After the mean and variance have been computed as described, the Cochran's Approximation to the Behrens-Fisher Student's t-test will be used.

Let n_b = the number of background observations and n_m = the number of foreground observations. From the background and foreground data calculate the background mean, $\bar{x}_b$, the foreground mean, $\bar{x}_m$, the background variance, s_b^2, the foreground variance, s_m^2, the variance of the estimator of the background mean, W_b, and the variance of the estimator of the foreground mean, W_m. From this information, the t-statistic is computed as:

$$t^* = \frac{\bar{x}_m - \bar{x}_b}{\sqrt{W_m + W_b}}$$

Calculation of the comparison t-statistic (t_c) against which t* will be compared necessitates first computing t_b and t_m from standard one-tailed tables where

t_b = value of t from t-table with n_b - 1 degree of freedom and confidence level 0.01;

t_m = value of t from t-table with n_m - 1 degree of freedom and confidence level 0.01.

A copy of the appropriate t-table is included here as Table 2. The comparison t-statistic t_c is:

$$t_c = \frac{W_b t_b + W_m t_m}{W_b + W_M}$$

The t-statistic, t*, is now compared with the comparison t-statistic, t_c, using the following decision rule:

If t* is greater than or equal to t_c then the null hypothesis, H_0, is rejected, H_1 is accepted, and the foreground mean is found to be greater than the background mean.

However, if t* is less than t_c then the foreground mean is not found to exceed the background mean and the null hypothesis, H_0, is maintained.

TABLE 2

t-TABLE FOR PROPOSED STATISTICAL TEST

Degress of Freedom	t for Alpha = 0.01
1	31.821
2	6.965
3	4.541
4	3.747
5	3.365
6	3.143
7	2.998
8	2.896
9	2.821
10	2.764
11	2.718
12	2.681
13	2.650
14	2.624
15	2.602
16	2.583
17	2.567
18	2.552
19	2.539
20	2.528
21	2.518
22	2.508
23	2.500
24	2.492
25	2.485
26	2.479
27	2.473
28	2.467
29	2.462
30	2.457
40	2.423
60	2.390
120	2.358
Infinity	2.326

References

1. Geo-Trans, Inc., Draft RCRA Permit Writer's Manual, Ground-Water Protection, 40 CFR Part 264 Subpart F, submitted October 4, 1983 to the U.S. EPA, sec. 6.3.1, "Basic Statistical Procedure", pp. 149.
2. ibid., p. 148.
3. ibid., p. 149 and p. 156
4. Conover, W.J., 1971, Practical Nonparametric Statistics,, John Wiley, New York.
5. Siegel, Sidney, Nonparametric Statistics for the Behavioral Sciences, McGraw-Hill, 1956, pp. 68-75 and 36-42.
6. ibid., p. 42.

Interim Statistics

MID 048 090 633
MID 000 724 831
February 28, 1989

SUMMARY OF SECONDARY PARAMETER BACKGROUND STATISTICS FOR t - TEST SCREENING PROCEDURE

Parameter	Units	Background Mean	Number of Bkgd. Values	W_b	t_b	Maximum Downgradient Mean
Ag	mg/l	0.00969	16	2.03E-05	1.753	0.0176
As	mg/l	0.00379	19	4.04E-06	1.734	0.00728
Ba	mg/l	0.0919	16	1.60E-03	1.753	0.162
Cd	ug/l	9.74	19	1.81E+01	1.734	17.1
CN	mg/l	0.0136	7	4.73E-05	1.943	0.0270
Cr(H)	ug/l	10.0	7	2.50E+01	1.943	19.7
Cr(T)	ug/l	16.8	19	7.14E+01	1.734	31.5
Cu	mg/l	0.00500	4	6.25E-06	2.353	0.0109
Hg	mg/l	0.000559	16	4.98E-08	1.753	0.000950
Mn	mg/l	0.0314	22	1.40E-04	1.721	0.0518
Pb	ug/l	42.4	19	4.12E+02	1.734	77.6
Se	mg/l	0.00387	16	4.70E-06	1.753	0.00767
Zn	mg/l	0.217	19	1.66E-02	1.734	0.440

The values in the rightmost column are the allowable maximum downgradient mean values as determined by equation 4 in the screening procedure, after substituting t_b for t_c. For those instances in which only one downgradient measurement for any well and parameter is obtained, and it exceeds the corresponding value in the rightmost column above, a statistically significant exceedance has been found. For those instances in which multiple downgradient replicates for any particular well and parameter are obtained, and the mean of these replicate measurements exceeds the corresponding value in this column, then a more complete statistical comparison is necessary using equations 1 and 5 from the screening procedure.

SECONDARY PARAMETERS
BACKGROUND CONCENTRATIONS IN UPGRADIENT WELLS
WAYNE DISPOSAL SITE NO. 2
MID 048 090 633

	PARA	UNITS	MEAN	VAR	COUNT	MODIFIED** VARIANCE	VARIANCE OF MEAN	MODIFIED** VAR OF MEAN	LLVOM***
	Ag	mg/l	0.00969	1.16E-05	16	4.05E-05	7.23E-07	2.53E-06	2.03E-05
*	Alk	mg/l	175	1.23E+03	4				
	As	mg/l	0.00379	6.06E-06	19	1.17E-05	3.19E-07	6.18E-07	4.04E-06
	Ba	mg/l	0.0919	1.03E-03	16	3.31E-03	6.43E-05	2.07E-04	1.60E-03
*	Ca	mg/l	9.46	6.68E+00	13				
	Cd	ug/l	9.74	1.80E+01	19	4.34E+01	9.46E-01	2.29E+00	1.81E+01
*	Cl	mg/l	7.02	4.25E+01	31				
	CN	mg/l	0.0136	5.95E-06	7	7.96E-05	8.50E-07	1.14E-05	4.73E-05
*	CO3	mg/l	55.0	2.57E+03	4				
	Cr(H)	ug/l	10.0	0.00E+00	7	3.89E+01	0.00E+00	5.55E+00	2.50E+01
	Cr(T)	ug/l	16.8	2.28E+01	19	1.23E+02	1.20E+00	6.49E+00	7.14E+01
	Cu	mg/l	0.00500	0.00E+00	4	1.11E-05	0.00E+00	2.78E-06	6.25E-06
*	Fe	ug/l	739	3.49E+06	31				
*	HCO3	mg/l	187	4.82E+02	13				
	Hg	mg/l	0.000559	2.01E-07	16	2.72E-07	1.26E-08	1.70E-08	4.98E-08
*	Mg	mg/l	4.8634375	6.22E+00	16				
	Mn	mg/l	0.0314	3.01E-03	22	3.07E-03	1.37E-04	1.40E-04	4.12E-05
*	Na	mg/l	68.9	9.58E+02	31				
	Pb	ug/l	42.4	3.98E+02	19	9.78E+02	2.10E+01	5.15E+01	4.12E+02
	Se	mg/l	0.00387	4.05E-06	16	1.07E-05	2.53E-07	6.71E-07	4.70E-06
*	S04	mg/l	5.62	4.22E+01	31				
	Zn	mg/l	0.217	3.16E-01	19	3.16E-01	1.66E-02	1.66E-02	4.28E-05

* Major ions for sign test evaluation only

** Calculated according to draft operating license, Attachment 11A

*** Alternative form of W according to draft operating license, Attachment 11A

NOTE. Parameter list is taken from Table 3b of the draft operating license Background data is from wells 7, 18, 19 and 31 for the period 1985-1987, including the spring of 1988 for Well 7. Background for carbonate and total alkalinity is from wells 18, 19 [illegible] and 40 from spring 1988.